Vol. 51 Ser. A Title-page and Index [Issued July, 1964]

THE REVIEW OF APPLIED ENTOMOLOGY

SERIES A: AGRICULTURAL

ISSUED BY THE COMMONWEALTH INSTITUTE OF ENTOMOLOGY

C·A·B

LONDON:
COMMONWEALTH INSTITUTE OF ENTOMOLOGY
56, QUEEN'S GATE, S.W.7

Price 14s. net

Commonwealth Agricultural Bureaux

EXECUTIVE COUNCIL

W. G. Alexander, C.B.E. (Chairman)	United Kingdom
J. B. Marshall, Ph.D. (Vice-Chairman)	Canada
W. Hartley	Australia
V. Armstrong, Ph.D.	New Zealand
A. J. Kidwai	India
C. Kemal Reheem	Pakistan
H. E. Seneviratne	Ceylon
J. A. Afari	Ghana
Toh Chor Keat	Malaysia
I. P. J. Obebe	Federation of Nigeria
R. Kyprianou	Cyprus
H.E. The High Commissioner	Sierra Leone
G. M. Nhigula	Tanganyika
C. S. McMorris	Jamaica
E. Murray	Trinidad and Tobago
Prince John Barigye	Uganda
H.E. The High Commissioner	Kenya
J. E. C. Coventry	Southern Rhodesia
W. A. C. Mathieson, C.M.G., M.B.E.	Dependent Territories
Sir Thomas Scrivenor, C.M.G., *Secretary* E. L. Hay, O.B.E., *Assistant Secretary*	Farnham House, Farnham Royal, Slough, Bucks.

COMMONWEALTH INSTITUTE OF ENTOMOLOGY

Director and Editor
E. O. Pearson, M.A.

Assistant Director
R. G. Fennah, M.A.

Assistant Editor
R. F. Avery, M.A.

Head Office—c/o British Museum (Natural History), Cromwell Road, London, S.W.7
Publication Office and Library—56, Queen's Gate, London, S.W.7

© *Commonwealth Agricultural Bureaux, 1964*

INDEX OF AUTHORS

A reference in heavy type indicates that a paper by the author has been noticed.

Abarca Ruano, M., **109**
Abbott, W. S., 423, 522
Abd El-Rahman, H. A., **28**
Abdul Kareem, A., **44**
Abe, G., **48**
Abo El-Ghar, M. R., **29**
Abramson, E., **468**
Abul-Nasr, S., **29**
Adams, J. B., **283**
Adams, J. M., **460**
Adkisson, P. L., **149, 160, 305**
Adler, V. E., **88**
Agafonova, Z. Ya., **74**
Agarwal, P. N., **622**
Agee, H. R., **167**
Agenjo, R., **678**
Agoropoulos, E. G. Caponi-, **321**
Agrawal, N. S., **532, 622**
Aguiar Guimarães, J. de, **447**
Aguilar, J. d', **513**
Ahlberg, O., **562**
Ahluwalia, P. J. S., **703**
Ahmad, R., **622**
Aickin, R. G., **468**
Aitken, A. D., **537**
Aizawa, K., **295, 405**
Alcaraz V[ieco], H., **284, 608, 647**
Alessandrini, M. A., **46**
Alessandrini, M. E., **241**
Alexander, A. E., **697**
Alexander, M. W., **260**
Ali, S. Mohammad, **258, 529**
Alikhan, M. A., **111**
Alkan, B., **50, 479**
Allan, R. M., **211**
Allen, K., **703**
Allen, N., **493**
Allen, R. M., **651**
Allen, W. W., **351**
Almeida, A. Antunes de, **288**
Almeida, E., **446**
Amman, G. D., **270**
Amsel, H. G., **431**
Anderson, C. A., **460**
Anderson, L. D., **95, 262, 292, 585**
Andreev, S. V., **522, 524**
Andres, L. A., **307, 495**
Andriano, M., **318**
Angalet, G. W., **495**
Angeles, N. J., **606**
Angelova, R., **189, 322, 393**
Anglade, P., **243, 244, 290**
Ankersmit, G. W., **690**
Antenucci, F. M., **454**
Antongiovanni, E., **38, 39**
Antunes de Almeida, A., **288**
Anwar, M. S., **527**
Aranguena, J. M. Herrera, **607, 608**
Archer, T. E., **460**
Ardley, J. H., **295**
Areekul, S., **155**
Armstrong, K. B., **116, 117**
Arndt, R. G., **6**
Arny, D. C., **350**
Arthur, A. P., **213, 568**
Arthur, B. W., **97, 148, 265, 524, 640**
Aruga, H., **295, 403**
Ascher, K. R. S., **635**
Ashall, C., **176**
Ashman, F., **121**
Asperen, K. van, **467**
Aspliden, C. I. H., **175**
Asquith, D., **93, 501**
Atger, P., **204, 549**
Atkins, E. C. (Miss E. C. Mason), **557**
Atkins, jr., E. L., **95**
Atkins, M. D., **109, 597**
Auclair, J. L., **177**
Audemard, H., **246**
Auer, C., **247**
Auersch, O., **429, 433**
Avens, A. W., **90, 108, 454, 577**
Averin, Yu. V., **253**
Avidov, Z., **479**
Axelrod, H., **400**
Ayoub (M. Al-Sayed), **33**
Ayyappa, P. K., **529**
Azevedo e Silva, F., **464**
Azim, A., **225**

Baccetti, B., **328, 329, 542**
Bachelder, S., **351**

Bachmann, F., **298**
Bacon, O. G., **147, 588**
Badry, E. A. El-, **32**
Baggiolini, M., **40, 688**
Bailey, J. C., **30, 372**
Baker, C., **62**
Baker, E. W., 2, **372, 572**
Bakke, A., **345**
Balachowsky, A. S., **59, 398**
Balevski, A., **192, 393, 553**
Balevski, A. D., **40**
Ball, H. J., **5, 161**
Ballschmieter, H., **111**
Balock, J. W., **263, 489, 492**
Baltazar, C. R., **28**
Baluja Marcos, G., **640**
Balwant Singh, **44**
Banaag, A. F., **288**
Bandong, P. P., **288**
Banerjee, S. N., **49**
Banks, C. J., **438, 469, 525**
Banttari, E. E., **648, 651**
Bär, F., **467**
Baranowski, R. M., **79**
Bardner, R., **60**
Barjac, H. de, **459**
Barker, R. J., **239**
Barker, T. W., **339**
Barlov, L., **327**
Barlow, C. A., **141, 225, 591**
Barlow, J. S., **172**
Bärner, J., **292**
Barnes, M. M., **571**
Barnes, O. L., **266, 500, 584**
Barontini, A., **36, 37, 39, 208, 421**
Barral, J. M., **285**
Barrès, P., **206**
Barreto Figueiredo, M., **446**
Barrett, C. F., **140**
Barry, D. L., **454**
Bartlett, B. R., **91**
Bartlett, F. J., **264**
Bar-Zeev, M., **208**
Basheer, M., **571**
Basile, J. V., **580**
Baskett, R. S., **147**
Basson, S. G., **112**
Bastida, R., **360**
Bastos Cruz, B. P., **446**
Basu, A. C., **49**
Batiashvili (Bathiaschwili), I., **296**
Batinica, J., **193**
Batra, H. N., **258, 414**
Baudin Sánchez, F., **680**
Baumeister, G., **459**
Bazzi, B., **39, 44, 460**
Beal, R. H., **406**
Beament, J. W. L., **236**
Beard, J. R., **524**
Beard, R. L., **177**
Beccari, F., **331**
Beck, E. W., **160**
Becker, G., **292, 348, 431, 639, 683**
Becker, W. B., **168**
Beckham, C. M., **159**
Bell, R., **22, 273**
Belton, P., **439**
Bénard, R., **204**
Bénassy, C., **130, 423, 426, 551**
Bengston, M., **137**
Benítez Morera, A., **679**
Benjamin, D. M., **4, 490, 639, 702**
Benkevich, V. I., **74**
Bennett, C. W., **650**
Bennett, F. D., **279, 648**
Bennett, S. E., **96, 368**
Benoit, D., **516**
Benschoter, C. A., **500**
Benz, G., **294, 295, 406, 688, 692**
Bera, B. K., **49**
Beran, F., **458, 589**
Beratlief, C., **320**
Berezina, V. M., **107**
Berg, C. O., **639**
Bergamin, J., **285**
Bergen, P., **698**
Bergold, G. H., **295**
Bernstein, Z., **296**
Beroza, M., **460, 519**
Berre, J. R. Le, **244, 245, 425**
Bertels M., A., **702**
Berton, A., **59**
Berville, P., **546**
Besemer, A. F. H., **467**
Bess, H. A., **442, 456,** 537
Betrem, J. G., **373,** 414
Betts, E., **174**
Bevan, W. J., **343**
Beye, F., **108, 627, 640, 703**
Bhatia, D. R., **529, 531, 621, 640, 703**
Bhatia, S. K., **257**
Bhattacharjee, N. S., **620**
Bianchi, H., **245, 423, 426**
Bigelow, R. S., **443**
Bigger, J. H., **272**
Biliotti, E., **206**
Binaghi, G., **173, 195, 234, 701**
Bindra, O. S., **415**
Biondi, G., **208**
Bird, F. T., **565**

Bird, J., **649**
Birkardeşler, H., **35**
Bishop, J. L., **90**
Bisht, N. S., **528**
Bjegović, P. [S.], **249, 328**
Black, L. M., **275**
Blair, E. H., **521**
Blais, J. R., **283, 284**
Blake, C. D., **137**
Blanc, H., **298**
Bleak, E. E., **266**
Blencowe, J. W., **118**
Bletchly, J. D., **110, 469**
Blickenstaff, C. C., **88**
Blunck, H., 288
Bobîrnac, B., **317, 318**
Bocquet, G., **458**
Boczek, J., **183, 184, 235**
Bode, H. Maier-, **682**
Bodenheimer, F. S., 288
Bodin, D., **46**
Bogavac, M., **326**
Bogdanov, V., **556**
Boguleanu, G., **320**
Böhm, H., **65, 295, 472, 632**
Böhm, O., **67, 688**
Boidin, H., **458**
Boĭkov, A., **190**
Bollaerts, D., **51**
Bombosch, S., **626**
Bond, E. J., **109**
Bondi, A., **347**
Bonfils, J., **513, 548**
Bonnefoi, A., **459**
Bonnemaison, L., **293, 407, 422, 550,** 557
Boocock, D., **339**
Booth, C. C., 271
Borgatti, A. L., **172**
Borkhsenius, N. S., **643**
Borstel, R. C. von, **525**
Bosch, R van den, **88, 151, 305, 442**
Bose, B. N., **620**
Boswell, A. L., **366, 490**
Bottermann, K. E. Wohlfarth-, **400**
Bouček, Z., **482**
Bouchard, P., **3**
Bouchet, J., **547, 701**
Boudreaux, H. B., **177**
Boulanger, L. W., **493**
Bourke, P. A., **104**
Boush, G. M., **260**
Bovey, P., **248, 482**
Bowen, W. R., **88**
Bowery, T. G., **167**
Bowling, C. C., **83, 364**
Boyer, W. P., **273**
Brader, I. M., **524**
Bradley, G. A., **567, 702**
Bradley, R. H. E., **350, 574**
Brady jr., U. E., **148, 265, 640**
Braesch, S. Fuzeau-, **236**
Braithwaite, B. M., **106, 137**
Brande, J. Van den, **50**
Brandt, H., **433**
Bransby-Williams, W. R., **74**
Bravenboer, L., **41, 50, 439**
Brazzel, J. R., **159**
Breakey, E. P., **22, 51**
Breese, M. H., **120, 696**
Brénière, J., **441, 442, 513**
Brett, C. H., **360**
Bridges, R. G., **524**
Briggs, J. B., **339, 380**
Bright jr., D. E., **488**
Brimblecombe, A. R., **389, 399**
Brindley, T. A., **177, 584**
Brinton, F. E., **484, 505**
Brion, L., **53**
Britton, E. B., **171**
Brixhe, A., **53**
Brizzi, G., **542**
Broadbent, L., **61**
Brooke, J. P., **231, 696**
Brooks, A. J., **21**
Brooks, A. R., 281
Brooks, D. L., **590**
Brooks, M. A., **295**
Brooks, R. F., **99, 158**
Brown, A. W. A., **294**
Brown, C. E., **568**
Brown, E. S., **313, 314, 438, 519**
Brown, H. E., 560
Brown, N. L., **108**
Brown, N. R., **592**
Browne, F. G., **373, 376, 377, 537**
Brownell, L. E., **525**
Bruehl, G. W., **652**
Bruel, S. Dormal-van den, **467**
Bruel, W. E. van den, **51**
Brüggemann, J., **468**
Brugger, A., 590
Brunson, M. H., **90**
Brunt, A. A. F., **118**
Brusse, M. J., **236**
Bryan, D. E., 20
Bryant, J. H., **63**
Bua, G., **194**
Buchelos, T. C., **60**
Buckland, C. T., **301**

Buckley, B. R., **5**
Buddenhagen, I. W., **408**
Buffam, P. E., **219**
Bugbee, W. M., **648**
Buhl, C., **335, 687**
Bull, D. L., **305, 357**
Bullock, J. A., **27, 436, 541**
Bullock, R. C., **45, 647**
Bund, C. F. van de, **303**
Buot, R., **441**
Burditt jr., A. K., **235, 263, 489, 492**
Burgerjon, A., **245**
Burges, D. H., **388**
Burkhardt, C. C., **5**
Burkhardt, G. J., **697**
Burnett, T., **505**
Burov, D., **416**
Burrage, R. H., **262**
Burrell, R. W., **153**
Burt, P. E., **61**
Bushland, R. C., **177**
Butani, D. K., **43**
Butcher, J. W., **84, 506**
Butler, E. E., **349**
Butler, L. I., **108, 267**
Buyckx, E. J. E., **435**
Buzzati-Traverso, A. A., **525**
Byerly, T. C., **239**
Bytinski-Salz, H., **464**

Caceres, S. Flores, **109**
Cagle, L. R., **19, 20**
Cairaschi, E. A., **296**
Čakar, L., **55**
Calahan, C. L., **655**
Calderon, M., **125**
Calderwood, W. A., **449**
Callahan, P. S., **6**
Cameron, E. A., **279**
Cameron, J. W. M., **177**
Campbell, F. L., 46
Campbell, R. W., 464, **665**
Campbell, T. G., **310**
Canagasingham, L. S. C., **618**
Canals, R. A., **573**
Cancela da Fonseca, J., 288
Cannon, F. M., **599, 605**
Canova, A., **104**
Cantwell, G. E., **692**
Čapek, M., **107**
Caplan, I., **503**
Caponi-Agoropoulos, E. G., **321**
Capoor, S. P., 649
Carden, P. W., **210, 558**
Caresche, L., **112, 441, 513, 514**
Carl, K., **277**
Carle, P., **548, 635**
Carles, J. P., **681**
Carlson, E. C., **658**
Carlson, O. V., **305**
Carlson, R. B., **84**
Carlson, S. D., **161**
Carnegie, A. J. M., **120, 667**
Carpenter, K., **62, 63**
Carter, Walter, **276**
Cartier, J. J., **365**
Cartwright, W. B., **516**
Carvell, K. L., **154**
Casida, J. E., **177, 261, 455, 494, 524**
Casilli, O., **173**
Casimir, M., **312**
Cassil, C. C., **241**
Caswell, G. H., **667**
Catley, A., **237**
Caussin, R., **467**
Cazier, M. A., **516**
Ceballos Jiménez, P., **680**
Cessac, M., **298, 422**
Chaboussou, F., **59, 290, 552, 681**
Chacko, M. J., **101**
Chada, H. L., **161**
Chadwick, L. E., **355**
Chadwick, P. R., **436, 678**
Chalfant, R. B., **79**
Chamberlain, W. F., **524, 525**
Champ, B. R., **390**
Chancogne, M., **299**
Chang (Chen-chou), **525**
Chang, G. S., **286, 287**
Chang, G. Y., **403**
Chang, H., **572**
Chang (Shun-shou), **612**
Chapman, P. J., **90, 108**
Chapman, R. F., **105, 701**
Chapman, R. K., **79**
Chararas, C., **59, 131, 680**
Charvát, K., **107**
Chastang, S., **549**
Chatterjee, P. N., **619**
Chatterji, S., **259, 530**
Chaudhry, Ghulam-Ullah, **623**
Chawla, S. S., **516**
Chen, C. M., **391**
Chevin, H., **244, 425**
Chiang, H. C., **271, 488, 516, 656**
Chiarappa, L., **485**
Chisholm, R. D., **87, 90, 400, 702**
Chiswell, J. R., **339, 340**
Chiu (Shu-chou), **611**

Chopra, I. C., **231**
Chowdhuri, A. N., **259**
Choyce, M. A., **228, 229**
Chrestian, P., **246**
Christenson, L. D., **263**
Chu, H. F., **286**
Chumakova, B. M., **72**
Chzu (Si-men), **286**
Ciampolini, M., **330, 331**
Claborn, H. V., **455**
Clancy, D. W., **569**
Clark, D. P., **443**
Clark, E. C., **576**
Clark, L. R., **608**
Clark, P. J., **139, 178**
Clark, R. C., **592**
Clarke, K. U., **408**
Clausen, C. P., **78**
Cleveland, M. L., **43**
Clinch, P. G., **207, 209**
Clinton, P. K. S., **27**
Close, R., **179**
Coaker, T. H., **694**
Cochaux, P. S. A., **443**
Coles, L. W., **148**
Colina, B. H., **482**
Collins, D. L., **464**
Collyer, J., **209**
Colwill, D. J., **234**
Commun, R. L., **440**
Comstock, J. A., **661**
Concienne, E. J., **501**
Condrashoff, S. F., **215, 572**
Cook, W. C., **239, 267**
Coombe, B. G., **182**
Coombs, C. W., **378, 694**
Coppel, H. C., **261**
Cordero, A. D., **152**
Costacos, T. A., **321**
Cotton, R. T., **173**
Coudriet, D. C., **274**
Coudriet, D. L., **13**
Coulon, J., **206, 424, 548**
Coulson, D. M., **240**
Coutin, R., **550**
Couturier, A., **639, 681**
Cowan jr., C. B., **86, 87, 582**
Cowly, G. T., **581**
Cox, C. E., **697**
Cox, J. A., **266**
Crafts, A. S., **241**
Craig, C. H., **598**
Cranham, J. E., **619, 672**
Creighton, C. S., **493**
Cressman, A. W., **269**
Croix, E. A. S. la, **669**
Crombie, A. C., 120
Crone, H. D., **524**
Crone, L. J., **351**
Cross, D. L., **656**
Crowell, H. H., **493**
Cruz, B. P. Bastos, **446**
Cueto jr., C., **44**
Cuillé, M., **440**
Cumming, M. E. P., **216, 593**
Currie, W. E., **98**
Cwilich, R., **521, 635**
Cymorek, S., **466**

Dadd, R. H., **485**
Dadinaki-Roussopoulou, D. A., **321**
da Fonseca, J. Cancela, 288
d'Aguilar, J., **513**
Dahm, P. A., **108**
Dal Monte, G., **466**
Damiano, A., **701**
Damsteegt, V. D., **652**
Dana, M. N., **164**
Danthanarayana, W., **672**
Darby, R. E., **78**
Das, G. M., **530, 620**
Das, N. M., **621**
Das, S. C., **620**
Das, S. R., **674**
Datta Gupta, A. K., **292**
Dauguet, P., **298**
Daviault, L., **662**
Davich, T. B., **269**
David, B. Vasantharaj, **571**
David, H., **527**
David, W. A. L., **299**
Davidson, G., **177**
Davis, A. C., **585**
Davis, D. W., **165, 261**
Davis, J. J., **287**
Davis, J. W., **86, 87, 582**
Davis, R., **459**
Dawsey, L. H., **160**
Day, M. F., **294,** 574
de Aguiar Guimarães, J., **447**
de Almeida, A. Antunes, **288**
Dean, H. A., **372**
Dean, G. J. W., **540**
Dean, R. W., **587**
Deay, H. O., **239, 516**
DeBach, P., **23, 77, 124**
de Barjac, H., **459**
Decelle, J., **668**
de Fluiter, H. J., **689**

de Gouveia, A. J. Soares, **300**
Delattre, R., **112, 440, 525, 670**
de Luca, Y., **207**
de Matos, A. H. Pinto, **300, 301**
Demaux, J. E. A., **107**
Dennis, N. M., **382**
Deonier, C. E., **271**
DePew, L. J., **166**
de Pietri-Tonelli, P., **36, 37, 38, 39, 45, 208, 421**
Deportes, L., **246**
Derbyshire, J. C., **44**
Desaymard, —, **441**
de Silva, M. D., **618**
Desmoras, J., **424, 467**
de Souza Lopes, H., **703**
Dessart, P., **229**
de Swardt, G. H., **111**
Dethier, V. G., **553**
de Ullivarri, D. Fernandez, **482**
Devi, K. J. Sumangala, **49**
de Viedma, M. G., **679**
de Wilde, J., **387, 691**
Díaz Nájera, A., **208**
Dicke, F. F., **177**
Dicker, G. H. L., **62, 559**
Dickson, R. C., **11,** 644
Diklić, V., **128**
Dionne, L. A., **281**
Dirimanov, M., **189, 322, 393, 415**
di Stefano, M., **289**
Ditman, L. P., **266, 460, 461, 697**
Dittrich, V., **83, 363, 590**
Dixon, J. C., **490**
Djulizibarić, T., **299**
Doane, C. C., **17**
Dobson, R. M., **695**
Dodov, D. N., **40**
Doering, G. W., **579**
Dogger, J. R., **364**
Dominick, C. B., **152**
Domsch, K., **686**
Donahaye, E., **125**
Donaldson, W. E., **8**
Donchev, K., **478**
Donegan, L., **696**
Donis, C., **120**
Doom, D., **106**
Dormal, S., **241**
Dormal-van den Bruel, S., **467**
Dorsey, C. K., **154**
Dosse, G., **334, 439, 625, 689**
Doty, A. E., **7**
Doucette, C. F., **16, 99**
Douglas, W. A., **83**
Dourindiche, R., **128**
Dowden, P. B., **456**
Downing, R. S., **450, 595**
Drouin, J. A., **601**
Drummond, R. O., **177**
Duarte, A. J., **701**
Dubost, P., **467**
Duckham, A. N., **212**
Ducrot, R., **467**
Duffy, E. A. J., **444**
Dumas, T., **108, 301**
Dunn, E., **116, 117**
Dunn, J. A., **388**
Dunning, R. A., **61, 62**
Dunstan, G. H., **208**
Duperrex, H., **688**
Duşchin, I., **319**
Dustan, G. G., **361**
Dutky, S. R., **265**
Dutt, N., **49**
Dyadechko, N. P., **134**
Dyer, E. D. A., **563**
Džuteski, B., **57**

Eaton, J. K., **46**
Édel'man, N. M., **73, 347**
Eden, W. G., **97**
Edwards, J. S., **45, 172**
Éfros, A. M., **347**
Egan, H., **208**
Eghlidi, S., **127**
Ehrenhardt, H., **299**
Ehrhardt, P., **243, 335, 525**
Eichenberger, J., **46**
Eichhorn, O., **102**
Eidmann, H., **41, 628**
Ekholm, S., **64**
El-Badry, E. A., **32**
El-Ghar, M. R. Abo, **29**
Elkady, E. A., **399**
El-Khidir, E., **105**
Ellenberger, C. E., **535**
El-Rahman, H. A. Abd, **28**
Elsasser, T. A., **408**
El-Sayed, M. Taher, **28, 31**
El Sebae, Abd el Khalek H., **503**
Emden, H. F. van, **591**
Emmel, L., **432**
Emsley, M. G., **459**
Engel, H., **132, 300**
English, L. L., **572**
Entwistle, P. F., **113, 115, 116, 118, 119, 378, 571, 693**
Eralp, M., **313**

Erdman, H. E., **534**
Erdmann, W. D., **468**
Ettershank, G., **137**
Evans, D., **223**
Evans, J. W., **177**
Evans, L., **178**
Evenhuis, H. H., **689**
Everett, T. R., **82**
Evers, C., **647**
Evlakhova, A. A., **522**
Ewan, H. G., **24**
Ezi, Tsao, **286**

Faber, W., **296, 473, 633**
Fabre, R., **467**
Fahey, J. E., **16, 108**
Fairchild, M. L., **235**
Falcon, L. A., **658**
Fandiño, D. S., **646**
Fankhänel, H., **101**
Farahbakhsh, G., **107**
Farnsworth, D., **460**
Farstad, C. W., **658**
Featherston, P. E., **267**
Fehn, L. Martins, **702**
Feldman-Muhsam, B., **195**
Fenili, G. A., **331**
Fennah, R. G., **122, 123, 348, 379**
Fenner, T. L., **461**
Ferguson, R. B., **580**
Fernandes, A. M. Silva-, **303**
Fernandez de Ullivarri, D., **482**
Féron, M., **204, 246**
Ferriere, C., **49**
Ferris, G. F., 486
Ferro, S., **543**
Fettes, J. J., **220**
Fewkes, D. W., **459**
Fife, L. C., **362**
Figala, H., **466**
Figala, J., **466**
Figueiredo, M. Barreto, **446**
Filipek, P., **183**
Fimiani, P., **632**
Finkenbrink, W., **299**
Finlayson, T., **172**
Finnamore, D. B., **662**
Finnegan, R. J., **9, 660**
Finney, G. L., **353**
Fischang, W. J., **19, 95**
Fischer, M., **480**
Fjelddalen, J., **691**
Flamant, G., **205, 546**
Flanders, S. E., **235, 292**
Fleming, W. E., **369**
Flint, W. P., **178**
Flocken, M., **440**
Florentine, G. J., **298**
Flores Caceres, S., **109**
Floyd, E. H., 594
Fluiter, H. J. de, **689**
Fonseca, J. Cancela da, 288
Foott, W. H., **214, 600**
Forbes, A. R., **605**
Forbes, R., **149**
Forgash, A. J., **236**
Forrest, J. D., **61**
Forster, I. W., **445**
Forsythe jr., H. Y., **148, 156, 268**
Foucart, G., **53**
Fournel, J., **467**
Foy, C. L., **241**
Fraenkel, G., **575**
Fragoso, A., **300, 301**
Francis, E. K., **460**
Francke-Grosmann, H., **177, 464**
Franklin, W. W., **654**
Franssen, C. J. H., **291**
Franz, J. M., **338, 551**
Frear, D. E. H., **501**
Frederiksen, R. A., **651**
Frediani, D., **234, 543**
Freeman, J. A., **466**
Freeman, T. N., **221, 572, 597**
Frehse, H., **696, 703**
Freitag, G., **292**
Freitag, J. H., **649**
Frey, W., **686**
Frings, H., **172**
Frings, M., **172**
Fujiwara, A., **315**
Fukami, J., **615**
Fukaya, M., **226**
Fukuto, T. R., **154, 467, 585**
Fulton, R. A., **366**
Furihata, H., **613**
Furniss, M. M., **10, 572, 580**
Furr, R. E., **108**
Furuta, Y., **405**
Fuzeau-Braesch, S., **236**
Fye, R. E., **370**
Fystro, I., **345**

Gabrielith-Shpan, R., **296**
Gage, J. C., **46**
Gaines, J. C., 46
Galbiati, F., **210**
Galichet, P. F., **205**
Gallaher, P. J., **178**

Gallo, D., **285**
Gallun, R. L., **298, 516**
Gambrell, F. L., **576**
Gámez, R., **647**
Gammon, E. T., **486**
Ganguli, R. N., **528, 530**
Gans, G., **367**
Gara, R. I., **354, 451**
García Monge, G., **573**
Gaud, S. Medina, **109**
Gaumont, R., **58**
Gay, F. J., **110**
Geering, Q. A., **52, 61, 94**
Gehring, R. D., **358**
Geissler, K., **556**
Gellatley, J. G., **181**
Genduso, P., **199**
Genung, W. G., **272**
Georgijević, E., **193**
Gérard, J., **299**
Gerhardt, P. D., **23**
Getzendaner, C. W., **271**
Getzin, L. W., **6, 406**
Ghani, M. A., **276**
Ghar, M. R. Abo El-, **29**
Ghauri, M. S. K., **42, 121, 314**
Ghidini, G. M., **701**
Ghulam-Ullah Chaudhry, **623**
Giang, P. A., **460**
Gibbs, S. D., **82, 108, 577**
Giles, P. H., **541**
Gillet, A., **53**
Gilmore, J. E., **692**
Giurea, M., **318**
Glass, E. H., **82**
Glick, P. A., **239**
Globus, O. A., **520**
Godan, D., **625**
Godavaribai, S., **673**
Goeden, R. D., **368**
Goldsmid, J. M., **667**
Gołębiowska, Z., **183**
Goncharenko, É. G., **134**
Gonzales, C. Q., **359**
Goodey, J. B., **238**
Goodey, T., **238**
Gopinath, K., **404, 527**
Gordon, C. F., **44, 460**
Goring, C. A. I., **240**
Gospodinov, G., **190, 417**
Gösswald, K., **236, 348**
Goth, R. W., **654**
Gould, H. J., **62, 557**
Gouveia, A. J. Soares de, **300**
Govinda Rao, P., **176**
Gradojević, Z. M., **54**
Gradwell, G. R., **464**
Graham, H. M., **362**
Graham, J. R., **460**
Graham, K., **346**
Graham, W. M., **461**
Grant, T. J., **176**
Gratwick, M., **380**
Graves, J. B., **159, 578**
Grayson, J. M., **300**
Greaves, T., **609**
Grechkin, V. P., **254, 255**
Green, G. W., **145, 146**
Green, H. B., **164**
Greenfield, I., **210, 339**
Gregor, F., **68**
Gregory, P. H., 469
Griffiths, D. A., **699**
Griffiths, K. J., **566**
Grigarick, A. A., **91**
Grigorov, S., **321**
Grimm, L., **703**
Grison, P., **549, 552, 636**
Grosch, D. S., **484**
Grosmann, H. Francke-, **177, 464**
Gry, M., **440**
Guagliumi, P., **284, 296, 606, 639**
Guerra, A. A., **90**
Guillot, M., **298**
Guimarães, J. de Aguiar, **447**
Gunther, F. A., **92, 240**
Gupta, A. K. Datta, **292**
Gupta, V. K., **413**
Guthrie, F. E., **15, 167, 260**
Guy, —, **441**
Guyer, G., **81**
Guyer, G. E., **172**
Gyrisco, G. G., **91, 148, 156, 267, 268, 368, 370, 405, 582, 585**

Habib, A., **399**
Hacskaylo, J., **357**
Hadlington, P., **105**
Hadžistević, D., **394**
Haegermark, U., **560**
Haeselbarth, E., **429**
Hafez, M., **518**
Hagen, A. F., **19, 81, 365**
Hagen, K. S., **151**
Hagley, E. A. C., **212, 499**
Haine, E., **642**
Haines, L. D., **44, 460**
Hale jr., R. L., **307**

Haliburton, W., **220**
Hall, C. V., **157**
Hall, I. M., **151, 262**
Hall, J. C., **305**
Halstead, D. G. H., **381**
Hamilton, D. W., **16**
Hamm, J. J., **702**
Hammer, O. H., **455**
Hampson, C. P., **339**
Hanna, R. L., **367, 497**
Hansen, A. J., **520**
Hanson, C. H., **364**
Haq, A., **675**
Haramoto, F. H., **442**
Harcourt, D. G., **510**
Hardee, D. D., **148, 267**
Hårdh, J. E., 470
Harding, J. A., **14**
Hardon, H. J., **467**
Hardy, J. L., **7**
Harein, P. K., **13, 167, 346**
Harker, J. E., **295**
Harman, D. M., **166**
Harpaz, I., **296**
Harper, A. M., **145, 597, 698**
Harries, F. H., **502, 578**
Harris, C. R., **15, 93, 593**
Harris jr., E. D., **21**
Harris, P., **508, 603**
Harrison, F. P., **81, 85, 157, 461**
Harrison, J. O., **487, 491**
Harrison, R. A., **138**
Hartley, G. S., **46, 210**
Hartsock, J. G., **239**
Harvey, H. E., **178, 516**
Harwood, R. F., **155**
Hašek, J., **69**
Hassan, A. A. G., **30, 34**
Hassan, A. S., **32, 33**
Hatai, N., **616**
Hatchett, J. H., **165, 166, 581**
Hayakawa, M., **236**
Hayes jr., W. J., **44**
Haynes, D. L., **506, 656**
Heath, D. F., **524**
Heath, G. W., **458**
Heathcote, G. D., **124, 302**
Heather, N. W., **287**
Heidenreich, E., 590
Heie, O., **344, 426**
Heikinheimo, O., **108, 291**
Heitor, F., **235, 547**
Helle, W., **303**
Hely, P. C., **181**
Hemming, C. F., **176**
Henderson, C. A., **83**
Henderson, C. F., **84, 165, 166, 581**
Henneberry, T. J., **80, 96, 490, 491, 583, 692**
Hennessy, D. J., **355**
Hennig, E., **522**
Henriet, J., **46**
Henry, J. E., **655**
Hensley, S. D., **501**
Hepburn, G. A., **634**
Herbert, H. J., **142, 511, 565**
Herne, D. H. C., **150, 218, 664**
Herrera Aranguena, J. M., **607, 608**
Hetrick, L. A., **21**
Hewlett, P. S., **170**
Hibbs, E. T., **305**
Hickin, N. E., **173, 643**
Hienton, T. E., **239**
Hietala, P. K., **459**
Higgons, D. J., **209**
Highnam, K. C., **237**
Hildahl, V., **143**
Hildebrand, E. M., **350**
Hill, S. O., **87**
Hille Ris Lambers, D., **106,** 344
Hills, O. A., **274**
Hinckley, A. D., **121, 270**
Hindin, E., **208**
Hinman, F. G., **489, 492**
Hiramatu, H., **226**
Hirano, C., **48, 315, 616**
Ho (Chi-lung), **286**
Hoare, B. G., **61**
Hobbs, G. A., **140, 639**
Hochmut, R., **236**
Hodson, A. C., **97, 488**
Holden, A. V., **400**
Höller, G., **623, 626**
Hollingsworth, J. P., **239**
Holmes, N. D., **213, 658**
Homan, R., **594**
Honma, K., **613, 615**
Hoof, H. A. van, **438**
Hopkins, A. R., **362, 370**
Hopkins, T. L., **524**
Hopping, G. R., 601, **702**
Hormchong, T., **271**
Horne, T., **525**
Hornig, H., **335, 687**
Horovitz, S., **605**
Horsfall, W. R., **108**
Hoskins, W. M., **241**
Hosny, M. M., **30, 34**
House, H. L., **172, 294**
Howard, C. M., **652**

Howe, R. W., **356, 381, 388, 468**
Howes, R., **210**
Hoyt, S. C., **82**
Hrdá, J., **250**
Hrdý, I., **100, 250**
Hsu (Sze-jih), **140, 660**
Huddleston, E. W., **267**
Huddleston, P., **654**
Huffaker, C. B., **353, 456**
Huger, A., **295**
Huggans, J. L., **584**
Hughes, R. D., **437**
Hukusima, S., **107, 226, 227, 615**
Hull jr., G., **403**
Hull, R., **61**
Hulley, P. E., **480**
Hung (Chung-chuan), **612**
Hunter, P. E., **503**
Huque, H., **524**
Hurlock, E. T., **673, 700**
Hurpin, B., **205**
Hurtig, H., **241**
Hussain, A. A., **123, 539**
Husseiny, M. M., **372**
Hussey, N. W., **42, 384**

Ibbotson, A., **244**
Ignoffo, C. M., **576**
Ikäheimo, K., **63, 64, 291**
Iliev, I., **417**
Ilkov, V., **187, 188**
Ingram, W. R., **534**
Inkson, R. H. E., **211**
Inoue, K., **617**
Ioannidis, I. D., **321**
Iperti, G., **58**
Irzykiewicz, H., **516**
Isaak, A., **263**
Isaak, L. W., **400**
Ishii, S., **315, 615, 616**
Ivanskiĭ, N. L., **522**
Ivany, J. J. H. Szent-, **236, 237**
Ives, W. G. H., **144, 563**
Iwao, S., **671**
Iwata, K., **225**
Iwata, T., **47**

Jackson, C., **664**
Jacobs, K. F., **209**
Jacobson, L. A., **220, 512**
Jacobson, M., **519**
Jacquiot, C., **206**
Jahn, E., **394, 684**
James, M. T., **703**
James, W., **362**
Jander, R., **177**
Janković, L., **56**
Jannone, G., **195, 234, 421, 631**
Janssen, M., **101**
Jaques, R. P., **404, 509**
Jasič, J., **332**
Jasmin, J. J., **664**
Jayaraj, S., **44**
Jefferies, D. J., **525**
Jeffery, G. L., **445**
Jenkins, D. W., **524**
Jenkins, J. N., **97, 269, 579**
Jenkins, L., **657**
Jensen, F. L., **24**
Jepson, W. F., **694**
Jermy, T., **43**
Jewell, H. K., **274**
Jimenez, I., **607**
Jiménez, P. Ceballos, **680**
Joachim, H. F., **685**
Jodko, J. Narkiewicz-, **185, 186, 391**
Johansson, E., **560**
Johansson, S., **572**
Johnson, C. G., **117, 437,** 469
Johnson, N. E., **80, 367, 452, 516, 564**
Johnson, V.A., **87**
Joly, R., **206**
Jones, C. P. Lloyd-, **342**
Jones, D. P., **208**
Jones, T. Palmer-, **445**
Jones, W. A., **519**
Jørgensen, J., **398, 426**
Josephson, L. M., **96**
Joshi, B. G., **675**
Jotwani, M. G., **414, 530, 621**
Jourdheuil, P., 557, **682**
Journet, P., **682**
Joyce, R. J. V., **175**
Judenko, E., **619**
Julou, L., **467**
Jung, M., **334**
Junqueira, G. M., **519**

Kagan, F., **235**
Kahl, E., **46**
Kais, A. G., **406**
Kaĭtazov, A., **323, 418, 553**
Kalandadze (Kalandadse), L., **296**
Kalashnikov, K. Ya., **317**
Kaloostian, G. H., **17**
Kalshoven, L. G. E., **517, 638, 703**
Kamano, S., **615**

Kamenkova, K. V., **523**
Kamiński, A., **460**
Kanervo, V., **108, 297**
Kansu, I. A., **337**
Kantack, E. J., **156**
Kapler, J. E., **4**
Kapur, A. P., **43, 235, 459**
Karadzhov, S., **393, 676**
Karczewski, B., **476**
Kareem, A. Abdul, **44**
Kariya, H., **316**
Karvonen, P., **459**
Kaschef, A. H., **634**
Kasting, R., **222, 439**
Katiyar, K. N., **203**
Kauer, K. C., **521**
Kawar, N., **35**
Kay, D., **114, 115**
Kayashima, I., **413**
Kearby, W. H., **702**
Keifer, H. H., 464
Kelér, S. von, **462**
Keller, J. C., **87, 97, 269, 579**
Kempster, R. H., **439**
Kenaga, E. E., **7, 521**
Kendrick, R. L., **273**
KenKnight, G., **350**
Kennedy, J. S., 271
Kennett, C. E., **353, 456**
Kerr, T. W., **8**
Kerr jr., T. W., **571**
Ketelaar, J. A. A., **46**
Khalifa, A., **29, 105**
Khalsa, H. G., **622**
Khare, B. P., **622**
Kharizanov, A., **189**
Khidir, E. El-, **105**
Khomyakova, V. O., **40**
Khotyanovich, A. V., **523**
Khristova, E., **40**
Kido, H., **24**
Kiigemagi, U., **496**
Kilpatrick, R. A., **351**
Kinard, W. S., **493**
King, D. R., **11, 490**
King, H. L., **656**
King, R. C., **359**
Kinzer, H. G., **165, 166, 581**
Kirchner, H. A., **557**
Kiritani, K., **413, 617**
Kirk, R. E., **298**
Kirkov, K., **324**
Kirkpatrick, T. H., **610**
Kiskin, P. Kh., **254**
Kishino, K., **47**
Kittur, S. U., **415**
Klicza, L., **186**
Kliefoth, R. A., **451**
Klimaszewski, S. M., **332**
Kloft, W., **243, 525**
Klomp, H., **533**
Klostermeyer, E. C., **7**
Klotzsche, C., **467**
Knight, R. L., **339**
Knipling, E. F., **94, 305**
Knoche, C., **396, 638**
Knülle, W., **107**
Kobayashi, J., **226**
Kobel, F., **60**
Koblitsky, L., **90, 400, 702**
Kocher, C., **299**
Koehler, C. S., **370, 504, 582**
Koehler, W., **464**
Koerber, T. W., **576**
Kögler, E. Müller-, **234**
Köhler, P., **297**
Kolya, A. K., **532**
Komblas, K. N., **675**
Kono, T., 594
Konov, Ya., **190**
Koons, J. R., **460**
Körting, A., **432**
Kotby, F. A., **30, 31**
Kovachevski, I. Kh., **40**
Kowalska, T., **185, 474**
Kozlov, V. M., **253**
Kramer, J. P., **295**
Krämer, K., **102, 623, 624**
Krantz, G. W., **100**
Krczal, H., **562**
Krieg, A., **295**
Krishnakumari, M. K., **232**
Krishnamurthy, K., **673**
Krysan, J. L., **355**
Krzeczkowski, K., **183, 184**
Krzeminski, L. F., **460**
Kudela, M., **69**
Kuenen, D. J., **689**
Kugler, J., **478**
Kühnelt, W., **177**
Kulman, H. M., **97, 166**
Kumar, K., **258, 528**
Kunkel, H., **243**
Kuntz, J. E., **369**
Kurian, C., **527**
Kurir, A., **293**
Kurup, A., **531**
Kushwaha, K. S., **531**
Küthe, K., **102**
Kutter, H., **247**

Laan, P. A. van der, **50, 229**
Labeyrie, V., **338**
LaChance, L. E., **305**
la Croix, E. A. S., **669**
Lafrance, J., **598, 604**
Laibach, E., **108**
Laird jr., E. F., **11**
Lakocy, A., **475**
Lal, Rattan, **528, 620, 674**
Lall, B. S., **531**
Lamb, K. P., **179, 180**
Lambers, D. Hille Ris, **106,** 344
Lamey, H. A., **95**
Landi, J., **23, 77**
Landmann, W. A., **460**
Lange, W. H., **91**
Langley, P., **408**
Langston, J. M., **83**
Lassiter, C. A., **455**
Laster, M. L., **108**
Laubmann, M., **396**
Lauffenburger, G., **441**
Lavabre, E. M., **440**
Laws, E. Q., **208**
Lazarević, B., **244, 249, 326, 348**
Leach, J. G., **652**
Leatherdale, D., **701**
Le Berre, J. R., **244, 245, 425**
Lee, D. C., **589**
Lee (Sung-yang), **161**
Lees, A. D., **386**
Lefkovitch, L. P., **126, 381**
Legal, J., **113**
Legge, J. B., **411**
Legner, E. F., **15, 43, 86, 158, 165, 261, 593**
Legowski, T. J., **62, 557**
Leigh, T. F., **495, 583**
Leius, K., **568**
Lekić, M., **54, 400**
Lemarie, J., **68, 251, 333**
Leonard, M. D., **349**
LeRoux, E. J., **3, 222, 447**
Lessmann, D., **430**
Leuchs, F., **471**
Leuck, D. B., **160**
Leutenegger, R., **702**
Lewis, C. T., **212**
Lewis, T., **168, 169**
Lhoste, J., **299, 441**
Liang (Tung-ting), **611**
Lichtenstein, E. P., **581**
Liebermann, J., **292, 483, 647**
Lienk, S. E., **90**
Likventov, A. V., **70**
Lilly, C. E., **140, 698**
Lindgren, D. L., **85, 92, 149, 240, 359**
Lindley, C. D., **61**
Lindquist, D. A., **357**
Lindquist, O. H., **221**
Lindsten, K., **563**
Linke, W., **61, 209**
Linsley, E. G., **516**
Lin Sun, **286**
Liotta, G., **201, 248**
Lipa, J. J., **392**
Liscombe, E. A. R., **218, 221**
Lisk, D. J., **241, 516**
Little, V. A., **357**
Liu, C. L., **391**
Liu (Hsien-hsiu), **611**
Lloyd, C. J., **231**
Lloyd, J. H., **52, 94**
Lloyd-Jones, C. P., **342**
Loan, C. C., **586**
Locher, J. T., **690**
Lode, O., **572**
Loebe, I., **431**
Loewel, E. L., **589**
Lofgren, C. S., **264**
Lombardini, G., **328**
Long, W. H., **501**
Longworth, J. F., **114**
Lopes, H. de Souza, **703**
Lopez D., F., **582, 587**
Lord, F. T., **564**
Lord, K. A., **298**
Louloudes, S. J., **108**
Lounsky, J., **52, 234**
Lovell, J. B., **494**
Lowe, A. D., **180, 445, 703**
Lowe, S., **494**
Lowry, W. L., **360, 499, 500**
Lubatti, O. F., **62, 177**
Luca, Y. de, **207**
Luckmann, W. H., **264**
Lüdemann, D., **640**
Luis, R. A., **288**
Lukins, R. G., **310**
Lulov, K., **188**
Lung, J. C., **391**
Lusis, O., **237**
Luteršek, D., **193**
Lynn, C. D., **24**
Lynn, G. E., **455**
Lyons, L. A., **566**
Lyons, T., **147**

McCabe, P. J., 369
McCain, F. S., 97
MacCollom, G. B., 164, 655
McCormick, W. J., 153, 501
McCoy, C. E., 162
MacCuaig, R. D., 347
McDonald, S., 1, 282, 489
MacDougall, D., 241, 460
McEwen, F. L., 585
McFarlane, J. A., 304, 398, 696
McGinnis, A. J., 222, 439
McGuire, J. U., 95
Machino, I., 107
Mackauer, M. J. P., 568
Mackay, M. R., 701
McKenzie, L. L., 486
Mackiewicz, S., 391, 475
McKinley, W. P., 460
Macko, V., 332
McKone, C. E., 46
MacLaren, R. B., 605
McLaughlin, R. E., 401, 402, 404
McLean, D. L., 79
MacLellan, C. R., 224
McLeod, J. M., 594, 662, 666
McMillian, W. W., 95
McMullen, L. H., 109, 369, 597
McMurtry, J. A., 352
McNelly, L. B., 571
McPhail, M., 582
MacPhee, A. W., 600
MacRae, H. F., 460
Madge, D. S., 438
Madsen, H. F., 150, 358, 372, 571, 657, 658
Maelzer, D. A., 609
Magee, C. J. P., 649
Mahoney, C. H., 241
Maier-Bode, H., 682
Mailloux, M., 9, 447
Maines, W. W., 369
Mainwaring, A., 62
Maisner, N., 683
Maitlen, J. C., 108
Majumder, S. K., 232, 673
Makarov, M., 476
Maki, T., 412, 516
Maksimović, M., 55, 327, 465
Maksoud, M. A., 29
Maksymiuk, B., 87, 581
Mallamaire, A., 440
Mallo, R., 646
Mallo, R. G., 702
Malujlo, T., 229
Malÿsheva, M. S., 71, 73
Mamaev, B. M., 458
Mamet, J. R., 640
Manolache, C., 235, 319, 320
Manolache, F., 320
Manson, G. F., 93, 505
Mantel, W. P., 291
Maramorosch, K., 177, 275, 652, 653
Maranhão, Z. C., 285
Marcos, G. Baluja, 640
Markkula, M., 41, 469, 641
Marschall, K. J., 590
Marsh, G. A., 457
Martelli, G. [M.], 173, 701
Martens, B. K., 522, 523, 524
Martens, P. H., 46
Martín, C., 680
Martin, Hubert, 695
Martin, J. J., 460
Martin, J. T., 46
Martineau, R., 663
Martini, C. K. H., 118
Martinović, M., 327
Martins Fehn, L., 702
Martouret, D., 235
Marzke, F. O., 268
Marzsó, L. Szalay-, 57, 58, 336
Mason, Miss E. C. (see Atkins, E.C.)
Mason, G. F., 177
Massee, A. M., 339
Mathlein, R., 561
Mathur, A. C., 231, 620, 621
Mathur, R. N., 44, 256
Mathys, G., 40, 400, 688
Matos, A. H. Pinto de, 300, 301
Matsuda, R., 177
Matsumoto, K., 411
Matsumoto, S., 572
Matsumoto, Y., 614
Matteson, J. W., 363
Mattick, L. R., 454
Mattson, V. J., 502
Maurizio, A., 589
Maxwell, C. W., 168, 360, 662
Maxwell, F. G., 97, 269, 579
May, A. W. S., 107
Mayer, K., 686
Mayné, R., 120
Mazurek, J. H., 93, 593
Medina Gaud, S., 109
Medler, J. T., 162, 350
Meier, W., 248, 471
Meikle, R. W., 520
Melis, A., 329
Melis, G., 542
Mello, E. J. R., 308

Mel'nikova, N. I., **183**
Meltzer, J., **51, 209**
Meng, H. L., **287**
Menon, M. G. Ramdas, **530**
Menon Vasudeva, P. P., **44**
Menzer, R. E., **266, 460**
Merino M., G., **520**
Merkel, E. P., **86, 566**
Merkl, M. E., **12**
Merry, C. A. F., **409**
Merton, L. F. H., **175**
Metcalf, C. L., **178**
Metcalf, R. L., **154, 178, 240, 468**
Metcalfe, J. R., **25**
Meuleman, W. L., **241**
Meyer, E., **334**
Meyers, C. P., **241**
Michalski, J., **465**
Middelem, C. H. Van, **79, 460**
Middlekauff, W. W., **359**
Mijin, K., **325**
Mijušković, M., **194**
Mikhov, Kh., **416, 478**
Mikołajski, M., **252**
Miksiewicz, M., **186, 475, 476**
Milaire, H., **423, 426**
Miles, J. W., **703**
Milićević, B. T., **46**
Miller, C. A., **599**
Miller, W. E., **452**
Millers, I., **639**
Milne, D. L., **633**
Milnes, R. H., **381**
Mirković, D., **193**
Miščević, V., **193**
Mišić, M. M., **46**
Mital, V. P., **529**
Mitić-Mužina, N., **54, 193, 297**
Mittler, T. E., **177, 485**
Miura, A., **411**
Miyake, T., **315**
Moericke, V., **347, 400, 639**
Mohammad Ali, S., **258, 529**
Mohinudeen, S. S., **618**
Molchanova, V. A., **523, 524**
Moldovan, E., **318**
Möllerström, G., **637**
Monastero, S., **197, 198, 200**
Monge, G. García, **573**
Monro, H. A. U., **301, 346**
Montagnini, M. I., **307**
Monte, G. Dal, **466**
Monteith, L. G., **512**
Mookherjee, P. B., **620**
Moore, A. D., **87**
Moore, C. A., **281**
Moore, I., **425, 635**
Moore, M. B., **651**
Moore, N. W., **642**
Moorefield, H. H., **355**
Moreau, J. P., **244, 425**
Moreau, R., **58**
Morera, A. Benítez, **679**
Morgan, C. V. G., **505**
Morgan, L. W., **160**
Morgan, N. G., **341**
Morganroth, J., **371**
Mori, H., **236, 316**
Morlova, I., **320**
Morris, D. S., **309**
Morris, O. N., **405, 506**
Morris, R. F., **602**
Morrison, E. O., **11**
Morrison, F. O., **9**
Morrison, L., **179**
Morse, R. A., **516**
Mortreuil, M., **524**
Mound, L. A., **302**
Mount, D. A., **260**
Mountford, M. D., **385**
Moussa, M. A., **31, 32, 33**
Moutous, G., **548, 635**
Mueller, W. C., **573**
Muhsam, B. Feldman-, **195**
Mulder, D., **126**
Mulla, M. S., **400**
Müller, F. P., **202, 292,** 344, **427, 557**
Müller, H., **516**
Müller, H. J., **203, 355**
Müller, H. W. K., **242, 395**
Müller-Kögler, E., **234**
Muma, M. H., **22, 569**
Mumford, B. C., **639**
Munger, F., **692**
Munroe, E., **702**
Murayama, J. J., **517**
Murcio Velasco, J. F., **582**
Murphy, R. T., **44**
Musa, S., **35**
Musgrave, A. J., **594**
Musil, M., **68**
Mutchmor, J. A., **591**
Muthukrishnan, T. S., **640**
Mužina, N. Mitić-, **54, 193, 297**
Myburgh, A. C., **111, 112, 435**
Myllymäki, S., **641**

Nachev, P., **187**
Nadel, D., **635**

Nagaraja Rao, K. R., **640**
Nagashima, E., **403**
Nair, K. K., **525**
Nair, M. R. G. K., **621**
Nairn, L. D., **143**
Naito, A., **44, 236**
Nájera, A. Díaz, **208**
Nakakihara, H., **262**
Nakano, K., **48**
Nakatsugawa, T., **108, 615**
Narayanan, E. S., **516**
Narkiewicz-Jodko, J., **185, 186, 391**
Nasonova, L. I., **73**
Nasr, S. Abul-, **29**
Nasr (El-Sayed A.), **32, 33**
Navas, D. E., **168**
Nayar, J. K., **575**
Neff, S. E., **639**
Neilson, W. T. A., **360, 564**
Neiswander, C. R., **400, 504, 655**
Neiswander, R. B., **10**
Nel, J. J. C., **435**
Nelson, R. M., **651**
Nelson, S. O., **239**
Nelson, W. A., **658**
Netto, A. Violante, **446**
Neumann, H., **640**
Neunzig, H. H., **358**
Newman, J. F., **209**
Newsom, L. D., **152, 153, 370,** 594
Newton, J. R., **142, 158, 592**
Newton, R. C., **498**
Nichols, C. W., **485**
Nielson, M. W., **98, 266**
Niemczyk, H. D., **15, 640**
Niessen, H., **696, 703**
Nigam, B. S., **622**
Nikolova, V., **40, 187, 292, 554**
Nilsson, H. E., **561**
Nirula, K. K., **256**
Nishiguchi, C., **103**
Nizamlıoğlu, K., **35, 36**
Noll, J., **202**
Nölle, H. H., **428**
Nonveiller, G., **325**
Norman, P. A., **176**
Norris, D. M., **368**
Norris, M. J. (Mrs. O. W. Richards), **386**
Nour, J. J., **650**
Nour, M. A., **126, 650**
Novák, I., **68**
Novák, K., **623**
Novák, V., **251, 465**
Nováková, E., **69**
Novero, E. S., **157**
Nummi, W. O., **639**
Nuorteva, M., **463**
Nuorteva, P., **63, 459, 470**

Oatman, E. R., **22, 43, 86, 158, 164, 593, 657**
O'Brien, C. W., **23**
O'Brien, R. D., **299**
Obrtel, R., **69, 333, 399**
Oehlke, J., **459**
Oertel, E., **588**
Oertel, J. C., **586**
Ogaza, B. Żak-, **70**
Ogborn, J. E. A., **669**
Ohnesorge, B., **242, 335, 428, 463, 629**
Oho, N., **226, 413, 617**
Okigbo, B. N., **91**
Okumura, G. T., **235**
Okuno, T., **412**
Olalquiaga F., G., **171**
Olley, J., **231**
Olney, C. E., **8**
Olomucki, E. (Mrs. E. Alumot), **347**
Olson, R. E., **603**
Oman, P. W., **239**
O'Neil, L. C., **603**
O'Neill, D. K., **697**
Onuoha, G. B. I., **403**
Oommen, C. N., **675**
Opsahl, B., **572**
Ordóñez, A. Riesgo, **680**
Orenski, S. W., **653**
Orian, A., **457**
Orlando, A., **307, 308, 446**
Orlob, G. B., **350, 693**
Ortman, E. E., **263**
Orwoll, E. F., **460**
Osborne, P., **700**
Oser, B. L., **241**
Osman, M. F., **703**
Oster, I. I., **294**
Oudemans, A. C., 625, 699
Ouye, M. T., **150**
Overmeer, W. P. J., **343**

Page, A. B. P., **62, 177**
Paine, R. W., 314, **670**
Painter, R. H., **157, 244, 297**
Pajni, H. R., **49**
Paliĭ, V. F., **515**
Palm, C. E., **467**

Palmer-Jones, T., **445**
Palmiter, D. H., **587**
Pandey, N. D., **532**
Pang (E-wa), **574**
Pant, J. C., **258**
Pant, N. C., **258, 532**
Papp, C. S., **292**
Paradis, R. O., **2, 222, 448**
Paredes, P. P., **606**
Parencia jr., C. R., **86, 87, 582**
Parent, B., **2, 448**
Parker, H. L., **194**
Parker, L. B., **369**
Parkhe, D. P., **531**
Parrott, W. L., **579**
Parshad, B., **571**
Parsons, E. C., **168**
Parsons, G. M., **577**
Pasarela, N. R., **572**
Paschke, J. D., **702**
Passlow, T., **136**
Paszek, E. C., **87**
Pathak, M. D., **258, 297**
Pathak, P. K., **531**
Patočka, J., **107, 250**
Patterson, N. A., **509**
Patton, R. L., **577, 699**
Paul, C. F., **674**
Pearce, G. W., **108**
Pearson, E. O., **387**
Pegazzano, F., **542**
Pelerents, C., **50**
Pellegrini, G., **39**
Pence, R. J., **259, 371**
Penrose, R. D., **570**
Peoples, S. A., **454**
Pereira, A. Lima G., **307, 308**
Pérez, M. E., **573**
Perron, J. P., **604, 664**
Perti, S. L., **674**
Pesson, P., **525**
Peswani, K. M., **257**
Peters, D., **574**
Peters, D. C., **235**
Peterson, L. K., **213, 658**
Peterson, L. O. T., **507**
Petrukhina, M. T., **134, 135**
Pfaff, W., **467**
Pfrimmer, T. R., **12, 239**
Phillips, J. H. H., **218, 235, 362, 665**
Phillips, J. R., **578**
Pickford, R., **511**
Piekarczyk, K., **235**
Pielou, D. P., **140, 141, 172, 484, 512**
Pieniążek, S. A., **331**
Pienkowski, R. L., **162**
Pietri-Tonelli, P. de, **36, 37, 38, 39, 45, 208, 421**
Pigatti, A., **308, 446**
Pigatti, P., **308, 446**
Pillai, G. B., **527**
Pimentel, D., **268**
Pinto de Matos, A. H., **300, 301**
Pitman, G. B., **572**
Pitre jr., H. N., **156**
Plasket, E. L., **369**
Poinar jr., G. O., **405, 585**
Pointing, P. J., **145, 406**
Poitout, S., **204**
Polen, P. B., **265**
Polivka, J. B., **575**
Polizu, A., **319**
Pollard, H. N., **17**
Pond, D. D., **281, 366**
Pool, M. C., **504**
Popov, P., **416, 418**
Popov, P. A., **556**
Popova, I., **191**
Popova, V., **188, 191, 322, 323, 417, 477, 676**
Posnette, A. F., **535**
Post, A., **690**
Postner, M., **103, 701**
Potter, C., **298**
Powell, J. A., **509**
Powell, K. M., **62, 209**
Powell, W. L., **260**
Powning, R. F., **516**
Pradhan, S., **257, 414, 530, 621**
Prasad, S. K., **414, 571**
Prasertphon, S., **702**
Prat, J. L. H. A., **46**
Pratt, H. D., **572**
Prentice, R. M., **572**
Prescott, H. W., **498**
Prevett, P. F., **378**
Prilop, H., **395**
Primault, B., **688**
Prins, G., **640**
Prints, Ya. I., **253**
Pritchard, A. E., **372**
Pritpal Singh, **531, 621, 640**
Proctor, J. H., **227, 669**
Prokopy, R. J., **368**
Prota, R., **676**
Proverbs, M. D., **142, 158, 483, 592**
Pruess, K. P., **365**
Pschorn-Walcher, H., **473**
Pulpán, J., **466**
Püschmann, S., **624**

Pussard, R., **515**
Putman, W. L., **218**
Putnam, L. G., **602, 604**
Puttler, B., **148**
Puzzi, D., **307, 308, 446**
Pye, E. L., **454**

Qayyum, H. A., **525**
Quednau, W., **235**
Questel, D. D., **272**
Quintana, F. J., **645, 646**
Quinton, R. J., **17**
Quoilin, J., **51**
Qureshi, M., **279**

Raatikainen, M., **64, 107, 108, 470, 516**
Rabb, R. L., **15, 260**
Radeleff, R. D., **177, 265**
Radinovsky, S., **100**
Radulović, S., **194**
Raghavan, D., **349**
Rahman, H. A. Abd El-, **28**
Rai, B. K., **414, 528, 621**
Raine, J., **595**
Rainey, R. C., **175**
Rainwater, C. F., **363**
Ramdas Menon, M. G., **530**
Ranaivosoa, H., **442**
Ranaweera, D. J. W., **672**
Randall, A. P., **217, 592, 664**
Randolph, N. M., **8, 97, 579**
Ranganathan, V., **527**
Rao, B. R. Subba, **101, 257**
Rao, B. Sripathi, **288**
Rao, K. R. Nagaraja, **640**
Rao, P. Govinda, **176**
Rao, V. P., **49**
Rao, V. Sudha, **459, 598**
Rasmussen, S., **640**
Ratcliffe, D. A., **642**
Rattan Lal, **528, 620, 674**
Raun, E. S., **590**
Rawlings, G. B., **465**
Rawson, J. W., **265**
Ray, J. O., **82**
Razoux Schultz, L., **53**
Read, D. C., **217, 218**
Reali, G., **171**
Reddy, G. S., **176**
Redfern, R. E., **368**
Reed, J. K., **502**
Reed, W., **228, 229**
Reeks, W. A., **143**
Reich, R., **201, 202, 625, 684**
Reid, R. W., **224, 447, 661**
Reiff, M., **703**
Reisch, J., **400**
Reisser, H., **133**
Ren, S. Z., **287**
Renault, T. R., **599**
Rescia, G., **236**
Reynolds, J. G., **46**
Ribas, W. C., **446**
Ribbands, C. R., **535, 538**
Rice, R. E., **20**
Richards, A. M., **181, 446**
Richards, Mrs. O. W. (see Norris, M. J.)
Richardson, A., **46**
Richardson, C. D., **504**
Ricker, D. W., **456**
Riegert, P. W., **483**
Riek, E. F., 311, **608**
Riesgo Ordóñez, A., **680**
Riley, W. D., **588**
Riordan, D. F., **348**
Ris Lambers, D. Hille, **106,** 344
Ritter, R., **636**
Rivard, I., **282, 449**
Rivnay, E., **237, 379, 479, 634**
Robak, H., **637**
Robert, A., **3**
Robert, P., **552, 681**
Roberts, F. S., **45**
Roberts, H., **373, 374, 375, 376, 377**
Roberts, R. B., **588**
Roberts, R. J., **587**
Robertson, I. A. D., **701**
Robertson, O. T., **362**
Robertson jr., R. S., **7**
Robinson, A. G., **140, 567, 660**
Robinson, D. M., **230**
Robinson, R. W., **585**
Robinson, V. B., 472
Rochow, W. F., **351, 573, 574**
Rode, H., **685**
Rodionova, L. Z., **643**
Rodriguez, H., **442**
Roffey, J., **176**
Roivainen, S., **469**
Rolston, L. H., **273, 361**
Romankow, W., **184**
Romanyk, N., **679**
Roonwal, M. L., 257, **292, 691**
Rose, G. J., **339**
Rosel, A., **641**
Rosen, D., **479**

Rosen, H. von, **561**
Rosenthal, I., **44**
Rosi, O., **38**
Ross, D. A., **567**
Rossouw, S. D., **236**
Roth, W., **299**
Rouse, P., **273**
Roussel, J. S., **159, 578**
Roussopoulou, D. A. Dadinaki-, **321**
Ruano, M. Abarca, **109**
Rudinsky, J. A., **450, 507**
Rudman, P., **110**
Rupérez, A., **679**
Rushton, M. P., **462**
Rusoff, L. L., **44**
Russ, K., **66, 472, 632**
Russell, G. E., **535**
Russell, L. M., **125, 575**
Russell, M. P., **99, 452**
Russo, G., **195, 196, 197, 289, 420, 545, 631, 677**
Rustom, Z. M. F., **31, 34**
Ryan, R. B., **507, 572**
Rygg, T., **344**

Saba, F., **203**
Sacantanis, K. B., **104**
St. John, L. E., **516**
Saito, T., **348**
Sakamoto, Y., **614**
Sakimura, K., **20, 275**
Salas, A., **520**
Salz, H. Bytinski-, **464**
Samoĭlova, Z. I., **522**
Sanborn, R. R., **657**
Sánchez, F. Baudin, **680**
Sanchez, F. F., **498**
Sanchez, L. O., **367**
Sanders, W., **108**
Sanderson, D. M., **455**
Sandner, H., **252, 253**
Şandru, I., **320**
Sanford, K. H., **84, 89, 564**
Santi, R., **36, 39, 44, 45, 421**
Săpunaru, T., **318**
Sardesai, J. B., **300**
Sartor, M. H., **586**
Sarup, P., **259, 530**
Sasa, M., **411**
Satchell, J. E., **385**
Sato, T., **617**
Saunders, G. W., **137**
Savage, L. B., **81**
Sayed, M. Taher El-, **28, 31**
Sayer, H. J., **410**
Sbur, D. E., **499**
Schaarschmidt, L., **560**
Schaefer, C. H., **306**
Schaefer, L., **546**
Schaefers, G. A., **351**
Schechter, M. S., **265, 460**
Schenk, J. A., **576**
Scherney, F., **172**
Schimitschek, E., **432**
Schindler, U., **463**
Schliephake, G., **100**
Schlinger, E. I., **151, 305**
Schmidt, C. H., **524, 525**
Schmidt, G. H., **348**
Schmidt, H. A., **685**
Schmiege, D. C., **577**
Schmutterer, H., **431, 433, 627**
Schneider, I., **337, 396**
Scholz, J., **467**
Schoonhoven, L. M., **383, 388**
Schott, H., **557, 701**
Schrader, G., **545**
Schread, J. C., **16, 76**
Schreier, O., **66, 293**
Schultz, L. Razoux, **53**
Schulz, K. R., **581**
Schulze, H., 699
Schütte, F., **300, 338, 628**
Schvester, D., **59, 245, 548, 635**
Schwardt, H. H., **370**
Schwenke, W., **628**
Schwerdtfeger, F., **431, 700**
Scott, H. G., **21, 572**
Sebae, Abd el Khalek H. El, **503**
Šedivý, J., **333, 399**
Sekhar, P. S., **177, 404**
Sekiguchi, A., **613**
Sellnick, M., **562**
Semenova, L. M., **292**
Sengalevich, G., **189, 415**
Seo, S. T., **492**
Serafimovski, A., **629**
Service, M. W., **372, 459**
Seume, F. W., **468**
Sferra, P. R., **82**
Shalla, T. A., **485**
Shanks jr., C. H., **367, 586**
Shapiro, I. D., **317**
Shapiro, V. A., **72, 523**
Sharif, M., **622**
Sharma, A. K., **571**
Sharma, G. C., **620**
Sharma, J. S., **531**
Sharma, L. S., **531**

Sharma, M. L., **620**
Sharma, R. B., **529**
Shaskol'skaya, N. D., **256**
Shaw, F. R., **19, 95**
Shaw, M. W., **211, 700**
Shelden, G. P. B., **310**
Shel'deshova, G. G., **644**
Shenefelt, R. D., **369**
Sherman, M., **236, 498**
Shiah (Wen-shu), **391**
Shibatsuji, T., **613**
Shih, C. Y., **572**
Shipp, E., **105**
Shipp, O. E., **159**
Shiraki, T., **703**
Shirasaki, S., **314, 616**
Shiromany, P. A., **414**
Shockley, P. A., **655**
Shorey, H. H. **307, 496, 585, 586**
Short, J. R. T., **591**
Shortino, T. J., **108**
Shpan, R. Gabrielith-, **296**
Shrader, S. A., **455**
Shrimali, D. S., **292**
Shriver, D.. **80**
Shukla, G. N., **674**
Shung, Y. I., **391**
Siang, N. I., **286**
Sigwalt, B., **233, 513**
Sillibourne, J. M., **303**
Silva, F. Azevedo e, **464**
Silva, M. D. de, **618**
Silva-Fernandes, A. M., **303**
Silver, G. T., **449, 601**
Simeone, J. B., **466**
Simionescu, L., **319**
Šimunić, I., **326**
Sinclair, W. B., **149**
Singh, Balwant, **44**
Singh, M. P., **529**
Singh, Pritpal, **531, 621, 640**
Singh, S. R., **268**
Singhvi, M. L., **292**
Sinha, M. M., **415**
Sinha, R. N., **2, 221**
Sinha, S. S., **415**
Sinreich, A., **394, 432**
Sippell, W. L., **216**
Sitlani, R., **454**
Skuhravý, V., **623**
Slonovskiĭ, I. F., **253**
Slykhuis, J. T., **275, 651**
Smirnoff, W. A., **220, 440, 659**
Smit, C. J. B., **26**
Smith, A. G., **138**
Smith, B. D., **169, 341, 342**
Smith, C. T., **95**
Smith, D. N., **223**
Smith, E. H., **362, 580**
Smith, F. F., **350, 366, 453, 490**
Smith, K. G., **700**
Smith, K. M., **295**
Smith, M. R., **117, 118**
Smith, R. C., **654**
Smith, R. F., 20, **177**
Smith, S. G., **600**
Smrž, J., **685**
Snowball, G. J., **310**
Soares de Gouveia, A. J., **300**
Soderholm, L. H., **382**
Sohi, S. S., **349**
Sol, R., **204**
Soles, R. L., **167**
Soliman, A. A., **30, 34**
Solly, R., **298**
Solymosy, F., **57**
Sömermaa, K., **562**
Sømme, L., **637**
Soper jr., R. S., **603**
Sorensen, E. L., **263**
Soueref, S. T., **675**
Souliotis, M. C., **321**
Southgate, B. J., **668**
Southwood, T. R. E., **437, 694**
Souza Lopes, H. de, **703**
Spaić, I., **56**
Specht, H. B., **600**
Speirs, R. D., **382**
Spiller, D., **138**
Spyropoulos, G. S., **321**
Sripathi Rao, B., **288**
Srivastava, J. B., **231**
Šrot, M., **250**
Staal, G. B., **172**
Stafford, E. M., **24**
Stairs, G. R., **565**
Stančić, J., **56, 394**
Stanev, M., **553**
Stanev, M. Ts., **40**
Staples, R. C., **653**
Stark, R. W., **10**
Starks, K. J., **151, 163**
Starý, P., **480, 633**
Staub, A., **636**
Stefano, M. di, **289**
Stefanov, D., **465**
Stegwee, D., **574**
Stein, W., **103**
Steiner, H., **689, 690**
Steinhauer, A. L., **88**

Steinhaus, E. A., **294, 457, 702**
Stenseth, C., **293, 691**
Stephen, W. P., **23**
Stephens, J. M., **295**
Sterling, J. D. E., **605**
Stern, V. M., **88, 151, 155, 497,** 551
Sternburg, J., **177**
Steudel, W., **241**
Stevens, R. E., **10**
Stevenson, A. B., **98**
Stevenson, J. H., **347**
Stewart, D., **520**
Stewart, K. E., **9**
Stewart, W. W. A., **281**
Stillwell, M. A., **4**
Stoller, B. B., **453**
Stone, L. E. W., **558**
Story, T. P., **145**
Stoyanov, Ts., **322**
Streams, F. A., **268**
Stringer, C. E., **264**
Strong, F. E., **20, 165, 274, 494**
Strong, L., **400**
Strong, R. G., **6, 359, 499**
Stroyan, H. L., **640**
Studziński, A., **235**
Stute, K., **459**
Subba Rao, B. R., **101, 257**
Sudha Rao, V., **459, 598**
Sugimoto, A., **616**
Sugonyaev, E. S., **135**
Sullivan, C. R., **601**
Sullivan, W. N., **265**
Sumangala Devi, K. J., **49**
Sundman, J. A., **11, 367**
Surtees, G., **382, 539**
Şuta, V., **318**
Swaine, G., **540**
Swanson, M. C., **153**
Swardt, G. H. de, **111**
Sweeny, R. C. H., **634, 640**
Swenson, K. G., **349, 401**
Syed, R. A., **279**
Sylvester, E. S., **275,** 535, **574**
Symmons, P. M., 387, **693**
Sypień, M., **331**
Szalay-Marzsó, L., **57, 58, 336**
Szczepański, H., **70**
Szent-Ivany, J. J. H., **236, 237**
Szmidt, A., **474**
Szumkowski, W., **297, 606, 607**

Tadić, M., **327**
Tadić, M. D., **36, 129.**
Taft, H. M., **167, 362, 363**
Taher El-Sayed, M., **28, 31**
Takahashi, F., **316, 614**
Takeda, U., **411**
Taketa, N., **48**
Takezawa, H., **48, 226**
Taksdal, G., **487**
Talalaev, E. V., **75**
Talhouk, A. S., **35, 205**
Talitskiĭ, V. I., **134, 135, 136**
Tamaki, Y., **48, 316**
Tan, M. F., **612**
Tanada, Y., **403, 407**
Tanaka, M., **617**
Tanasijević, N., **297**
Tao, C. C., **612**
Tao (C. Chia-chu), **611**
Tapley, R. G., **669**
Tappan, W. B., **262**
Tardo, S., **199**
Targe, A., **246**
Taschenberg, E. F., **82, 577**
Tashiro, H., **239, 576**
Taylor, C. E., **302**
Taylor, J. M., **110, 233**
Taylor, L. R., **383, 437, 469**
Taylor, R. L., **178**
Teerink, B. J., **533**
Telenga, N. A., **136**
Templin, E., **463, 685**
Ten, F. C., **611**
Terriere, L. C., **496**
Terry, H. J., **62**
Tew, R. P., **303, 380**
Thakare, K. R., **257**
Thalenhorst, W., **334, 463**
Thatcher, R. C., **43, 77**
Theune, D., **50**
Thevasagayam, E. S., **618**
Thielemann, R., **241, 428**
Thobbi, V. V., **530**
Thomas jr., C. A., **368**
Thomas, H. A., **371**
Thomas, R. S., **572**
Thomas, R. T. S., **457, 517**
Thompson, E. G., **166**
Thompson, G. H., **346**
Thompson, H. E., **5, 14, 15**
Thompson, W. L., **99**
Thorpe, D. R., **501**
Thresh, J. M., **114, 340**
Thurston, R., **151, 163, 357**
Thygesen, T., **427, 636**
Ticheler, J. H. G., **434**
Tietz, H., **467, 696, 703**

Tiittanen, K., **108**
Tikar, D. T., **257**
Ting Wen Poh, **314**
Tinnilä, A., **107**
Tippins, H. H., **159**
Toba, H. H., **364**
Todd, D. H., **309**
Todd, S. H., **697**
Tomasucci, G., **37, 38, 39**
Tombes, A. S., **236**
Tominić, A., **128**
Tomizawa, C., **617**
Tomlinson, jr., W. E., **18**
Tonelli, P. de Pietri-, **36, 37, 38, 39, 45, 208, 421**
Torchio, P. F., **23**
Tosheva, Ts., **187, 188**
Toshima, A., **613, 615**
Traverso, A. A. Buzzati-, **525**
Treat, A. E., **453**
Treboux, J., **299**
Trehan, K. N., **49**
Treherne, J. E., **524**
Tremblay, E., **544**
Tremola, E., **289, 677**
Trentini, R., **677**
Trifunović, V., **249**
Triplehorn, C. A., **17, 655**
Tripp, H. A., **508, 596**
Truhaut, R. C., **467**
Tryon, E. H., **154**
Tsai, Y. P., **612**
Tsalev, M., **417, 676**
Tsao, C. H., **360, 499, 500**
Tsao Ezi, **286**
Tsugawa, C., **46, 314, 616**
Tsvetkov, D., **187, 188, 324**
Turica, A., **399, 646**
Turnipseed, S. G., **502**
Turnock, W. J., **563**
Tuttle, D. M., **651**
Tydeman, H. M., **339**
Tzanakakis, M. E., **238**

Ullah, Chaudhry Ghulam-, **623**
Ullivarri, D. Fernandez de, **482**
Unterstenhöfer, G., **299**
Us, P. A., **326**
Uspenskiĭ, G. A., **253**

Vago, C., **204, 205, 235, 295**
Valcarce, A. C., **274**
van Asperen, K., **467**
van de Bund, C. F., **303**
van den Bosch, R., **88, 151, 305, 442**
Van den Brande, J., **50**
van den Bruel, S. Dormal-, **467**
van den Bruel, W. E., **51**
van der Laan, P. A., **50, 229**
van der Wolf, J. P. M., **396**
Vanderzant, E. S., **497, 504**
van de Vrie, M., **207, 690**
van Emden, H. F., **591**
van Hoof, H. A., **438**
Vaňková, J., **69**
Van Middelem, C. H., **79, 460**
Vappula, N. A., **44**
Varley, G. C., **464**
Varma, P. M., 649
Vasantharaj David, B., **571**
Vasev, A., **186, 192**
Vasić, K., **53**
Vasilev, M., **418**
Vasiljević, L. A., **36, 129, 348**
Vasquez A., V., **520**
Vassiliou, A. A., **321**
Vasudeva, P. P. Menon, **44**
Vehrke, H., **172**
Velasco, J. F. Murcio, **582**
Velthuis, H. H. W., **690**
Vereshchagina, V. V., **133**
Verhoyen, M., **207**
Verner, P., **466**
Vernon, J. D. R., **559**
Viado, G. B., **525**
Vidano, C., **171, 515**
Vieco, H. Alcaraz, **284, 608, 647**
Viedma, M. G. de, **679**
Viel, G., **299**
Viggiani, G., **629**
Vijverberg, A., **245**
Viktorov, G. A., **182**
Vilkova, N. A., **254**
Villegas R., E., **608**
Vincent, L. E., **85, 92, 240**
Violante Netto, A., **446**
Virostek, J. F., **639**
Virtanen, A. I., **459**
Vité, J. P., **242, 354, 451, 702**
Vlitos, A. J., **409**
von Borstel, R. C., **525**
von Kéler, S., **462**
von Rosen, H., **561**
Vorsatz, E., **685**
Voss, G., **103**
Vrie, M. van de, **207, 690**
Vukčević, R., **129**
Vukovits, G., **67**

Wadhi, S. R., **258**
Waede, M., **132, 687**
Wagner, F., **132, 335**
Wagner, W., **544**
Waite, B. H., 649
Waites, R. E., **460**
Walcher, H. Pschorn-, **473**
Waldbauer, G. P., **303**
Waldron, A. C., **572**
Walkden, H. H., **239, 382**
Walker jr., H. K., **497**
Walker jr., J. K., **95**
Walker, J. R., **584**
Walker, K. C., **267**
Wallace, H. A. H., **2, 221**
Wallace, L. E., **157**
Walley, G. S., **599**
Wallis, R. L., **152, 163**
Wallner, W. E., **96**
Waloff, Z., **172**
Walton, R. R., **361**
Wang, C. L., **286**
Ward, J., **124**
Ware, G. W., **501**
Ware, J. H., **572**
Warner, R. E., **639**
Warren, L. O., **654**
Wasconcelos, F., **308**
Wassink, H. J. M., **50**
Watanabe, T., **261, 494**
Watson, M. A., **385,** 535
Watson, T. K., **666**
Watt, K. E. F., **573**
Watters, F. L., **218**
Way, M. J., **60, 177, 386**
Wearne, G. R., **311**
Webb, F. E., **143**
Webb, F. W., **63**
Webley, D. P., **558**
Webster, J. A., **357**
Weekman, G. T., **5**
Węgorek, W., **185, 474**
Weiden, M. H. J., **355**
Weidhaas, D. E., **524, 525**
Weidner, H., **683**
Weigand, G., **131**
Weismann, L., **251**
Welch, H. E., **218**
Wellington, W. G., **401**
Wellman, F. L., **649**
Wells, A. L., **81**
Wells, S. A., **1**
Wellso, S. G., **149**
Wensler, R. J. D., **532**
Wentzel, K. F., **428**
Wesselman, H. J., **460**
Westdal, P. H., **140**
Wester, R. E., **453**
Westigard, P. H., **150**
Westlake, W. E., **400, 521, 702**
Wharton, A. L., **118**
Wheatley, G. A., **388**
Wheatley, P. E., **536**
Whellan, J. A., **125**
Whetstone, R. R., **298**
Whitcomb, W. H., **22, 655**
White, G. V., **593**
White, M. G., **89**
White, R. G., **281**
White, R. W., **90**
Whitehurst, W. E., **455**
Whitney, W. K., **239**
Wiąckowska, I., **70**
Wiąckowski, S., **70**
Wiąckowski, S. K., **332**
Wikén, T., **482**
Wilcoxson, R. D., **648**
Wildbolz, T., **636, 691**
Wilde, J. de, **387, 691**
Wilde, W. H. A., **510, 666**
Wilkey, R. F., **486**
Wille, H., **482**
Willett, K. C., **177**
Williams, D. A., **694**
Williams, D. J., **230**
Williams, J. J. W., **210**
Williams, J. R., **640**
Williams, K., **484, 512**
Williams, W. R. Bransby-, **74**
Williamson, D. L., **576**
Williamson, G. D., **519**
Wilson, E. O., **177**
Wilson, F., **310, 311, 444, 459**
Wilson, J. W., **460**
Wilson, K., **667**
Wilson, L. F., **12, 99, 492**
Wilson, M. C., **298**
Wilson, P. N., **459**
Winden, B. A., **449**
Winder, G. H., **61**
Winterfeld, R. G., **271**
Winteringham, F. P. W., **524**
Winterlin, W. L., **460**
Winton, M. Y., **154**
Wirth, W., **467**
Wise, K. A. J., **139**
Wit, S. L., **467**
Witkowska, D., **185, 476**
Witkowski, W., **476**
Witkowski, Z., **465**

Woehst, J. E., **703**
Wohlfarth-Bottermann, K. E., **400**
Wojnarowska, P., **185**
Wolf, J. P. M. van der, **396**
Wolfenbarger, D. O., **14, 502**
Womeldorf, D. J., **570**
Wongsiri, T., **8**
Wood, D. L., **219**
Wood jr., E. A., **268, 271**
Wood, F. A., **43, 360**
Wood, G. W., **43, 569**
Woodham, D. W., **160**
Woodroffe, G. E., **694**
Woolford, M. H., **572**
Workman, R. B., **503**
Wright, F. N., **668**
Wyatt, I. J., **384, 703**
Wyniger, R., **238**

Yamada, M., **46, 314, 616**
Yamazaki, S., **616**
Yamvrias, C., **481**
Yasuda, S., **226**
Yeates, M. N. D. B., **347**
Yee, P. T., **505**
Yeo, D., **44**
Yokoyama, T., **177**
York, J. O., **655**
Yoshimoto, C. M., **703**
You, C. H., **612**
Young, V. D., **271**
Yudelovitch, M., **525**

Zaami, V., **197**
Zabirov, Sh. M., **317**
Zäch, C., **46**
Zacharuk, R. Y., **281, 536**
Zagulyaev, A. K., **133**
Zaher, M. A., **30, 31, 32**
Zakhvatkin, A. A., 699
Zak-Ogaza, B., **70**
Zamfirov, Ts., **190, 323, 392, 416, 478**
Zech, E., **684**
Zeev, M. Bar-, **208**
Zelený, J., **623**
Zinna, G., **419, 545, 630**
Zinov'ev, G. A., **75**
Ziv, M., **379**
Živojinović, D., **53**
Živojinović, S., **235**
Znamenskiĭ, V. S., **40**
Zocchi, R., **541**
Zomorrodi, A., **127**
Zondag, R., **444**
Zschintzsch, J., **683**
Zuk, P., **450**
Zunino, H. A., **646**
Zwart, K. W. R., **690**
Zweig, G., **454, 460**
Zwölfer, H., **280, 639**

GENERAL INDEX

In the case of scientific names of arthropods, the page references are cited only under the generic headings. Chemical compounds having numerical prefixes (bis-, di-, etc.) are indexed under these prefixes, but the prefixes o-, m- and p- (ortho, meta and para), O-, N- and S- to indicate position of radicals, and normal, secondary and tertiary are ignored for alphabetisation.

A

Abelmoschus esculentus (see *Hibiscus*)
aberrans, Pyrilla; *Typhlodromus*
Abies (Fir), *Chermes* spp. on, in Austria, **394**; pests of, in Czechoslovakia, **69, 250**; *Chermes* spp. on, in India, **459, 598**; *Dioryctria abietella* on, in Italy, **541**; pests of, in U.S.S.R., **255**; pests of, in N. America, **219, 576**; injection of, with sodium arsenite, **69**
Abies alba, Chermes spp. on, in Germany, **102**
Abies amabilis, Chermes piceae on, in U.S.A., **219**
Abies balsamea, pests of, in Canada, **4, 283, 284, 592, 599, 659**; *Choristoneura fumiferana* on, in U.S.A., **12, 492**; secondary infestation of logs of, by Lamiids and Siricids, **12**; infected by wood-destroying fungi introduced by Siricids, **4**
Abies fraseri, pests of, in N. Carolina, **270, 459**
Abies grandis, pests of, in U.S.A., **219, 702**
Abies lasiocarpa, Chermes piceae on, in U.S.A., **219**
Abies nordmanniana, Chermes spp. on, in Germany, **102**
Abies sibirica, pests of, in U.S.S.R., **75**
abietella (Schiff.), *Dioryctria*
abietella, auct., *Dioryctria* (see *D. abietivorella*)
abieticola, Gilpinia
abietina, Pristiphora
abietinum, Rhopalosiphum (*Elatobium, Liosomaphis*)
abietinus, Mindarus
abietiperda, Dasyneura
abietis, Cephalcia; *Hylobius*; *Neodiprion*
abietivorella, Dioryctria
abnormis, Leptomastidea
abrupta, Empoasca
abutilonea, Trialeurodes
Acalymma vittata, use of light-traps to reduce infestation by, on cucumber in Indiana, **239**
Acanthiophilus helianthi, survey of data on natural enemies of, **516**
Acanthocinus aedilis, destroying bark-beetles in Finland, **463**
Acantholyda pinivora (*nemoralis*), forms of, on pines in Poland, **464, 465**
Acanthophoenix crinita, Brontispa limbata on, in Mauritius, **457**
Acanthopsyche sierricola, on cacao in Nigeria, **571**; sprays ineffective against, **119**
Acanthoscelides obtectus, in Angola, **300**; in stored beans, **252, 300**; effects of population density on reproduction of, **252**; measures against, **300**
Acarapis, age in relation to susceptibility of honey bees to species of, **589**
Acarus farris, infesting stored cereals and cereal products, **699**; question of interfertility of, with members of *A. siro* complex, **699**; lectotype of, **699**
Acarus siro (infesting stored products), in Britain, **699**; in Canada, **218, 221, 699**; in Chile, Egypt and Kenya, **699**; in Poland, **183, 184**; in Sweden, **562**; in U.S.A., **699**; field occurrence of, **184**; bionomics of, **699**; effects of other mites on damage to grain by, **184**; effects of atmospheric humidity on, **107**; occurrence of hypopi of, **183**; question of interfertility of members of complex of, **699**
Acer negundo, Hyphantria cunea on, in Austria, **295**; influence of, on egg production by *H. cunea*, **295**
Acer nigrum, Paraclemensia acerifoliella on, in Ontario, **567**
Acer rubrum, Paraclemensia acerifoliella on, in Ontario, **567**
Acer saccharum, pests of, in Canada, **404, 567, 569**
Aceratagallia curvata, on lucerne in Arizona, **98, 266, 267**; relation of sex and population density of, to damage to lucerne, **267**
Aceria erinea, on walnut in Austria, **632**

Aceria essigi (on blackberry), in Austria, **632**; in Switzerland, **40**
Aceria neocynodonis, on lawn grasses in S. Rhodesia, **125**
Aceria phloeocoptes, in Hungary, **133**; in U.S.S.R., **133, 134**; on plum, **133, 134**; bionomics and natural enemies of, **133, 134**
Aceria sheldoni (on *Citrus*), in Greece, **675**; in Italy, **208**; in S. Rhodesia, **125**; systemic insecticides ineffective against, **208**
aceriana, Gypsonoma
acerifoliella, Paraclemensia
Acethion (see O,O-Diethyl S-Ethoxycarbonylmethyl Phosphorodithioate)
3-(α-Acetonylbenzyl)-4-hydroxycoumarin (see Warfarin)
3-(α-Acetonylfurfuryl)-4-hydroxycoumarin (see Fumarin)
10-Acetoxy-cis-7-hexadecen-1-ol, as component of sex attractant of *Lymantria dispar*, **519**; attractiveness of optical isomers of, **519**
Acetylcholine, action of carbamate insecticides on cholinesterase in relation to, **154**
Achaetoneura aletiae (parasitising Lepidoptera), in Costa Rica, **488, 492**; attempted introduction of, into Yugoslavia from U.S.A., **328**; bionomics of, **328**
Acheta commodus (see *Teleogryllus*)
Acheta domesticus, reared on animal feeds, **577**
Achromobacter, species of, in *Pseudaletia unipuncta*, **402**
Achrysocharella formosa, parasitising *Phytomyza heringiana* in Italy, **629**; characters of, **629**
Achrysocharella ritchiei, parasitising *Leucoptera coma* in Congo, **668**; effect of endrin on populations of, **668**
acinaciformis, Coptotermes
Acinopterus angulatus, on lucerne in Arizona, **98**
Acleris comariana, bionomics of, on strawberry in Germany, **242**
Acleris gloverana (*variana*, auct.), on conifers in western N. America, **506, 509, 601**; effects of weather on populations of, **601**; tests of *Bacillus thuringiensis* against, **506**; considered distinct from *A. variana*, **509**; characters of, **510**
Acleris variana (Fern.), on conifers in eastern N. America, **509**; *A. gloverana* considered distinct from, **509**
acraea, Estigmene
Acricid, tests and uses of, against Tetranychids, **50, 208, 209, 432, 450, 691**; against *Aculus schlechtendali*, **82**; toxicity of, to *Nasonia vitripennis*, **690**; fungicidal action of, **208, 209**; in sprays, **82, 450**; as deposit, **690**
Acridiophaga caridei (see *Sarcophaga*)
Acrobasis vaccinii, on cranberry in Massachusetts, **18**; responses of, to ultraviolet light, **18**
Acrocarpus fraxinifolius, Eurema blanda silhetana on, in India, **528**
Acrocercops cramerella, on litchi in Formosa, **525**
Acrocercops prosacta, on sweet potato in Fiji, **121**; parasite of, **121**
acrocercopsis, Mesocoelus
Acrolepia assectella, bionomics of, on leeks in France, **547**; sprays against, **547**
Acronicta (see *Apatele*)
Actebia fennica, on blueberry in New Brunswick, **569**; estimation of larval populations of, **569**
Actia nudibasis, parasitising *Rhyacionia buoliana* in Germany, **463**
Aculus fockeui, leaf-spotting of *Prunus* spp. caused by, in Austria, **67**; sprays against, **67**
Aculus lycopersici, on tomato in California, **20**; food-plant range of, **20**; map of distribution of, **389**; factors affecting development of, **20**
Aculus pelekassi, in Florida and Greece, **126**
Aculus schlechtendali (on fruit trees), in British Columbia, **596**; in Washington, **82**; tests of acaricides against, **82, 596**; resistance to parathion in strains of, **82**
acuminatus, Ips; *Norbanus*
Acyrthosiphon (see *Macrosiphum*)
Adalia bipunctata, attacking *Myzus humuli* in Bulgaria, **324**; predacious on *Quadraspidiotus perniciosus* in Yugoslavia, **129**
Adalia decempunctata decempustulata, beneficial mites destroyed by, in Germany, **624**
Adalia simmondsi sp.n., predacious on *Chermes* spp. in India, **459**
Adansonia digitata, infested by *Analeptes trifasciata* in Ghana, **375**; swollen-shoot virus of cacao transmitted to, by aphid and *Planococcoides njalensis*, **118**; experiments with cacao necrosis virus and, **118**
Adelencyrtus aulacaspidis, parasitising *Aulacaspis rosae* in France, **130**
Adelges (see *Chermes*)
Adelphocoris lineolatus, on leguminous forage plants in Saskatchewan, **598, 599**; bionomics, migration and parasite of, **599**

Adelphocoris superbus, on lucerne in Alberta, **140**; predators of, **140**; effects of spring burning on populations of, **140**; sprays against, **140**
Aden, cotton pests in, **227, 228, 669**; *Schistocerca gregaria* in, **228**
Adhesive Bands, for trapping insects, **102, 295, 671**; for trapping mites, **541**
Adhesive Traps, for aphids, **111, 179, 180**; for *Athalia rosae*, **201**; for bark-beetles, **693**; for weevils, **368, 498, 584**; for *Operophtera bruceata*, **569**; efficiency of types of, **469**
Adhesives, rain-resistance of insecticide deposits improved by, **88**; for holding Tetranychids to glass plates, **43**; study of, **46**
adonidum, *Pseudococcus*
Adoxophyes orana, in Britain, **62**; in Japan, **316**; on apple, **62, 559**; on tea, **316**; bionomics of, **62**; factors affecting larval growth and adult emergence of, **48, 317**; timing of sprays against, **62**
adulatrix, *Eutelia*
adulticolus, *Parapsyllaephagus*
Adzuki-bean Weevil (see *Callosobruchus chinensis*)
Aedes aegypti, use of larvae of, in bioassay of insecticides, **355, 425, 502, 522**
aedilis, *Acanthocinus*
Aegeria apiformis (see *Trochilium*)
Aegeria exitiosa, insecticides against, on peach in U.S.A., **16, 490, 580**
Aegeria myopaeformis, on fruit trees in Bulgaria, **415**
Aegeria pictipes, Thiodan sprays against, on peach in Indiana, **16**
Aegeria tipuliformis (on black currant), in Czechoslovakia, **333**; in Switzerland, **688**; bionomics of, **688**; parasites and fungus disease of, **333**; measures against, **689**
aegopodii, *Cavariella*
Aelia, systematics and distribution of species of, in Middle East, **314, 519**; on wheat, **519**
Aelia furcula, on cereals in Persia, **314**
Aelia rostrata (on cereals), in Cyprus, **314**; in Greece, **321**; in Persia and Turkey, **314**
aelops, *Beskia*
Aeneolamia flavilatera nirguensis subsp.n., on sugar-cane and grasses in Venezuela, **606**
Aeneolamia varia saccharina (in Trinidad), on pangola grass, **459**; on sugar-cane, **409**; insecticides against, **409**; susceptibility or resistance to chlorinated hydrocarbons in strains of, **409**
aenescens, *Naranga*
aeneus, *Meligethes*
aequalis, *Heterobostrychus*
aequus, *Mesopolobus*
aerifrons, *Chamaesphecia* (*Pyropteron*)
aeripennis, *Ctenicera*
Aerobacter aerogenes, *Pseudaletia unipuncta* infected by, **402**
Aeroglyphus robustus, recorded from stored wheat in Saskatchewan, **221**
Aerosols, acaricides applied in, against *Tetranychus* spp., **366**; insecticides applied in: against *Anagasta kuehniella* in mills, **637**; against Pentatomid in houses, **372**; against *Rhagoletis cerasi*, **132, 187, 300**; other outdoor applications of insecticides in, **132, 134, 188, 324, 440, 549, 580, 687**; applied from aircraft, **56, 57, 687**; bees unharmed by, **134**; evaporation, diffusion and deposition of insecticides in, **572**
aestivus, *Rhizotrogus* (*Amphimallon*)
Aethecerus placidus, parasitising *Choreutis bjerkandrella* in France, **338**
affinis, *Agria* (*Parasarcophaga*); *Drosophila*; *Xyleborus*
Afghanistan, *Eurygaster integriceps* in, **313**
Africa, *Sosylus* spp. in, **378**; Phytoseiid mites of, **372**; protection of stored products in, **440, 668**
Africa, East, *Schistocerca gregaria* in, **410**
Africa, North, *Mamestra brassicae* in, **408**
Africa, South, *Ceratitis* spp. in, **111, 435**; *Heliothis armigera* on lupins in, **435**; pests of fruit trees in, **111, 112, 230, 435, 480**; Tortricids on other plants in, **112**; *Locustana pardalina* in, **26, 27**; *Tetranychus telarius* in, **209**; *Cryptolestes turcicus* in flour mills in, **126**; beneficial insects in, **112, 120**; tolerance limits for insecticides in, **111**
Africa, West, *Bemisia tabaci* in, **302**; *Eulophonotus myrmeleon* on cacao in, **378**; pests of forest trees and timber in, **376, 377**; report on termite research in, **235**; pests of stored groundnuts in, **673**
africanus, *Lyctus*
Agallia constricta, transmission of plant viruses by, **275**
Agar, use of plugs of, in experiments with cotton extracts and *Anthonomus grandis*, **97**; in diets and rearing media for insects, **8, 127, 150, 368, 586, 587**
Agathis stigmatera, parasitising Pyralid larvae in Grenada, **279**
Ageniaspis, parasitising *Leucoptera coma* in Congo, **668**; effect of endrin on populations of, **668**
agnata, *Lampronota* (*Meniscus*) (see *L. nitida*)

Agonoderus lecontei, in peach orchards in Ontario, **664**; effects of DDT on populations of, **664**
Agonoscelis pubescens (*versicolor*), on sorghum in Sudan, **433**
Agria affinis, destroying *Dendrolimus superans* in U.S.S.R., **75**; fatty acids increasing growth rate of, **172**
agricola, *Anisoplia*
Agrilus ater (*sexguttatus*), on poplar in Germany, **685**
Agriotes, key to larvae of species of, **459**
Agriotes sputator, in Bulgaria, **416**; seed treatment against, **416**
Agromyza frontella, on lucerne in Bulgaria, **322**
Agromyza kolobowae, bionomics of, on lucerne in Bulgaria, **321**
Agromyza nana, on clover in Bulgaria, **322**
Agromyza phaseoli (see *Melanagromyza*)
agropyrella, *Sipha* (see *Rungsia kurdjumovi*)
agropyri, *Eriopeltis*
Agropyron, *Eriopeltis agropyri* on, in U.S.S.R., **135**; efficiency of species of, as food-plants of *Camnula pellucida*, **604**
Agrotis, experiments with *Achaetoneura aletiae* and species of, **328**
Agrotis c-nigrum (see *Amathes*)
Agrotis exclamationis, bionomics of, in Poland, **474**; mass rearing of larvae of, **185**
Agrotis ipsilon (*ypsilon*), on groundnut in Brazil, **446**; on potato in India, **256**; on maize in Iowa, **590**; on *Atropa belladonna* in Jammu, **621**; in Ontario, **93**; on cabbage, **611**; bionomics of, **593**; bacterial disease of, **590**; tests and uses of insecticides against, **93, 256, 611**
Agrotis orthogonia, in Alberta, **220, 512**; biochemical studies of varieties of wheat in relation to feeding by, **439**; diapause in, **220, 512**
Agrotis segetum, on tomato in Italy, **677**; sprays against, **677**
Agrotis ypsilon (see *A. ipsilon*)
Aircraft, dispersal of *Popillia japonica* by, **104**; used for applying insecticides, **24, 49, 52, 56, 57, 71, 80, 81, 83, 87, 88, 129, 132, 147, 151, 164, 166, 217, 229, 284, 308, 335, 354, 441, 450, 493, 540, 558, 581, 655, 658, 682, 687**; assessment of spray deposits from, **87**; residue hazards of dusts applied from, **164**; virus spray applied from, **220**
Alabama, cotton pests in, **265**; *Heliothis zea* on maize in, **97**
Alabama argillacea, in Texas, **87**; in Venezuela, **297**; on cotton, **87, 297**; occurrence of, on *Cienfuegosia affinis*, **297**; larval and adult habits of, **297, 298**; light-trap catches of, **87**; sprays against, **87**
alaiensis, *Polydrusus*
Alaska, *Ips semirostris* on spruce in, **702**
alaskensis, *Pachynematus* (*Pikonema*)
Albania, *Eurygaster maura* in, **314**
Alberta, pests of beet in, **145, 489, 597, 698**; pests of cereals in, **1, 213**; pests and diseases of lucerne in, **140**; forest pests in, **216, 568, 569, 594, 601, 661**; *Operophtera bruceata* on fruit trees in, **568, 569**; *Agrotis orthogonia* in, **220, 512**; wireworms in, **282**; pests of stored grain in, **218**; beneficial insects in, **140, 569**; management of *Bombus* colonies in, **639**
albescens, *Arachnis*
albicornis, *Urocerus*
albicosta, *Loxagrotis*
albifrons, *Spilochalcis*; *Symmerista*
albipennis, *Elasmus*; *Periclista*; *Systole*
albistriga, *Amsacta*
albitextura, *Cardiaspina*
Albizia, *Xyleborus fornicatus* on species of, in Ceylon, **619**; *Eurema blanda silhetana* on species of, in India, **528**
Albizia chinensis, **528**
Albizia falcata, **528, 619**
Albizia lebbeck, **528**
Albizia odoratissima, **528**
Albizia sumatrana, **619**
albosparsus, *Hylobius*
Alcaligenes, in *Pseudaletia unipuncta*, **402**
Alcohol, in light-traps for Lepidoptera, **657**
Alder, *Saperda carcharias* on, in Czechoslovakia, **250**; development of *Cryptorhynchus lapathi* on, **337**
Alder, Speckled (see *Alnus rugosa*)
Aldrin, against ants, **201**; toxicity of, to *Aphis maidis*, **530**; against Mirids, **117, 462**; against other Hemiptera, **50, 526, 562, 677**; against Curculionids, **10, 57, 174, 195, 647**; against Elaterids, **113, 260, 262, 503**; against Melolonthids, **299, 398, 514**; against other Coleoptera, **18, 132, 153, 272, 304, 369, 371, 380, 428, 475, 514, 670, 673**; resistance to, in strains of Coleoptera, **5, 260, 261, 272, 503**; against Cecidomyiids, **132, 184, 384**; against *Hylemya* spp., **108, 281, 345, 422, 602**; against Trypetids, **168, 611**; against other Diptera, **16, 108, 425, 559**; resistance to, in strains of Diptera, **15, 93, 602, 611**; against Noctuids, **93, 112, 113, 163, 256, 366, 414, 482, 611, 677**; against Pyralids, **15, 86**; against other Lepidoptera, **331, 498, 544**; against grasshoppers and locusts, **163, 195, 296, 528, 621**; against

Forficula auricularia, **261**; against termites, **400**, **619**, **702**; against Thysanoptera, **113**; resistance to, in predacious mites, **491**; in dusts, **57**, **174**, **184**, **345**, **371**, **422**, **425**, **544**, **559**, **670**; evaluation of fillers for dusts of, **46**; in granules, **18**, **153**, **160**, **261**, **371**, **602**, **647**; in sprays, **18**, **50**, **163**, **201**, **261**, **296**, **304**, **366**, **371**, **380**, **384**, **462**, **482**, **498**, **526**, **559**, **602**, **621**, **677**; as deposit, **261**; seed treatment with, **113**, **132**, **262**, **345**, **422**, **425**, **428**, **572**; soil treatment with, **15**, **16**, **18**, **112**, **132**, **153**, **168**, **256**, **260**, **272**, **281**, **299**, **331**, **345**, **366**, **369**, **380**, **398**, **400**, **422**, **475**, **514**, **544**, **602**; treatment of planting material with, **260**, **345**; applied in transplanting water, **15**; applied with fertiliser, **113**; treatment of nests with, **619**; uses of, against pests of stored products, **673**; vapour toxicity of, **498**; lacquer formulation of, **673**; effects of, on plants, **262**, **345**, **425**, **559**, **572**; effects of storage on seed treated with, **428**; residues of, in plants, **160**, **380**; residues of, in soil, **369**, **522**, **702**; metabolism of, in soil, **581**, **582**; determination of, **46**, **304**, **369**, **400**, **522**, **702**; bioassay of, **369**, **522**; dieldrin as metabolite of, **384**, **581**, **582**; and dieldrin, **673**; synergism of other insecticides with, **370**, **581**, **582**; and bactericide, **384**; and saltpetre, **475**

alecto, *Telenomus* (*Prophanurus*)

Aleochara bilineata, parasitising *Hylemya* spp. in Prince Edward Island, **217**

aletiae, *Achaetoneura*

Aleurites fordii, *Sthenias cylindrator* on, in Swaziland, **634**

Aleurocanthus woglumi (on *Citrus*), in Mexico, **272**; development of sooty mould favoured by, **125**; natural enemies of, **125**; insecticides against, **125**; survey of data on, **125**

Aleyrodes proletella (*brassicae*), factors affecting food-plant selection by, **302**

Alfalfa (see Lucerne)

alfierii, *Paederus*

Algeria, *Bruchus lentis* on lentil in, **207**; *Eurygaster maura* in, **314**

Alkaloids, relation of aphid infestation to content of, in *Lupinus angustifolius*, **236**

Allethrin, toxicity of, to *Alphitobius laevigatus*, **170**, **171**; treatment of stored wheat with, against *Sitophilus oryzae*, **678**; comparative toxicity of, to arthropods, **155**; 3,4-methylenedioxyphenyl synergists with, **460**

Allium cepa (see Onion)

Allium fistulosum, attractiveness of varieties and hybrid of, to *Hylemya antiqua* in Quebec, **664**

Allophanurus indicus sp. n., bionomics of, parasitising *Bagrada cruciferarum* in India, **101**

Allothrombium mitchelli sp. n., predacious on *Chermes piceae* in N. Carolina, **459**

Alloxysta scutellata, hyperparasite of *Macrosiphum pisum* in Czechoslovakia, **633**

alluaudi, *Xyleborus*

Almond, Lepidoptera on, in California, **658**; *Plagiolepis pygmaea* on, in Sicily **201**

Alnus rugosa, *Eriocampa ovata* on, in Quebec, **3**

Alodan (see 5,6-Di(chloromethyl)-1,2,3,4,-7,7-hexachlorobicyclo[2.2.1]heptene-2)

Alopecurus pratensis, *Chloriona furcifera* on, in Japan, **315**

Alophus kaufmanni, bionomics of, on valerian in Bulgaria, **187**

Alphitobius laevigatus, tests of insecticides against, **170**, **171**

alpicola, *Malacosoma*

alpina, *Podisma* (*Miramella*)

alpinus, *Labrorychus*

Alsophila pometaria, on apple in Connecticut, **17**; *Bacillus thuringiensis* against, **17**

Altica (see *Haltica*)

Aluminium Phosphide, effect on groundnut germination of fumigation with tablets containing, **301**

Alurnus humeralis, on oil palm in Ecuador, **520**; parasites of, **520**; sprays against, **520**

Amara pennsylvanica, in peach orchards in Ontario, **664**; effects of DDT on populations of, **664**

Amathes c-nigrum, bionomics of, in Poland, **474**; mass rearing of larvae of, **185**

Amathes collaris, on blueberry in New Brunswick, **569**

Amathes smithii, on blueberry in New Brunswick, **569**

Ambeodontus tristis, in New Zealand, **138**; tests of timber treatments against, **138**

ambiguella, *Clysiana* (*Clysia*)

Amblymerus verditer, parasitising *Choristoneura pinus* in Wisconsin, **490**

Amblyteles jucundus, parasitising *Macronoctua onusta* in Ohio, **505**

Amblytylus nasutus, on bluegrass in Kentucky, **152**, **163**; insecticides against, **163**

Amedoria spinosa, parasitising *Haltica* spp. in Ontario, **587**

Am. Cyanamid 18133 (see O,O-Diethyl O-2-Pyrazinyl Phosphorothioate)

americana, *Periplaneta*

americanum, *Malacosoma*

americanus, Dryocoetes (see *D. autographus*)
amethystinus, Tetrastichus
amicus, Sympherobius
Amine Alginate, formulation of pyrethrins with, for treatment of packaging materials, **231**
Amino Acids, relation of, to feeding of *Selenothrips rubrocinctus* on cashew leaves, **122, 123**
5 - Amino - 1 - bis(dimethylamido)phosphoryl-3-phenyl-1,2,4-triazole, tests of contact and systemic activity of, against insects and mites, **51**
S-(2-Aminoethyl)isothiuronium Bromide Hydrobromide, use of, in experiments on mode of action of DDT, **355**
2-Aminopyridine, reversal of activity of, as antimetabolite of nicotinic acid, **259**; as synergist with imidazole, **259, 260**
amiskwiensis, Ips
Amitus hesperidum, parasitising *Aleurocanthus woglumi*, **125**; established in Mexico from India and Pakistan, **125**
Ammonium Bifluoride, toxicity of, to bees, **589**
Ammonium Carbamate, effect on groundnut germination of fumigation with tablets containing, **301**
Ammonium Fluoride, toxicity of, to bees, **589**
Amorpha fruticosa, Eulecanium corni on, in Yugoslavia, **54**
Amphimallon, flight habits of species of, in Yugoslavia, **325**
Amphimallon aestivum (see *Rhizotrogus*)
Amphimallon majalis, in France, **194**; in New York, **194, 576**; parasite of, **194**; flowering of plants in relation to development of, **576**
Amphimallon solstitiale, parasite of, in France, **195**; in Yugoslavia, **325**
Amphitetranychus viennensis (see *Tetranychus*)
Amphitornus coloradus, on *Stipa comata* in British Columbia, **604**
Amphorophora rubi, varietal susceptibility of raspberry to, **459**; transmitting virus diseases of raspberry, **459**
Amphotericin, effects of, on Tetranychids, **578**; derived from *Streptomyces*, **578**
ampla, Cryptarcha
Amsacta albistriga, Cantheconidea furcellata predacious on, in India, **571**
amygdali, Hyalopterus
Amyosoma zeuzerae (see *Bracon*)
Anacardium occidentale, Selenothrips rubrocinctus on, in Trinidad, **122**; physiological condition of, in relation to nutrition of *S. rubrocinctus*, **122, 123**
Anadaptus sanctaecrucis, in peach orchards in Ontario, **664**; effects of DDT on populations of, **664**
Anagallis arvensis, virus isolated from, in England, **535**
Anagasta kuehniella, in Britain, **537**; in Germany, **129**; in Norway, **637**; infesting stored products, **481, 537, 637**; influence of climate on infestation of flour mills by, **466**; susceptibility of, to low temperatures, **637**; parasitised by *Bracon hebetor*, **484**; experiments with *Trichogramma embryophagum* and eggs of, **338, 533**; *Bacillus thuringiensis* isolated from, **129**; mode of action of *B. thuringiensis* in, **481**; effects of γ-radiation on eggs of, **50, 51**; insecticides against, **637**; toxicity of acaricides to eggs of, **424**; experiments with ^{65}Zn and, **484**; larval characters of, **537**
anaglypticus, Conotrachelus
Anagrus optabilis, parasitising Delphacids in Madagascar, **513**
Anagyrus antoninae, parasitising *Antonina graminis*, **272**; established in Florida, **272**
Anagyrus pseudococci, parasitising *Planococcus* in Italy, **420**; parasite of, **420**
anale, Sinoxylon
Analeptes trifasciata, bionomics of, on forest trees in Ghana and Nigeria, **375, 377**; natural enemies and other mortality factors of, **375, 377**; measures against, **375**
Anaphoidea (see *Patasson*)
Anaphothrips obscurus, on maize in Ohio, **18**; phorate against, **18**
Anarsia lineatella, on almond in California, **658**; on fruit trees in U.S.S.R., **133**; bionomics and adult habits of, destroying *Aceria phloeocoptes*, **133, 134**; traps in relation to adult activity of, **658**
Anarthronota thuringiaca, parasitising *Hydroecia petasitis* in Switzerland, **280**; question of use of, against *H. micacea*, **280**
Anasa tristis, on squash in Kansas, **157**; antibiotic effect of resistant squash varieties on nymphal development of, **157**
Anastatus disparis, egg-parasite of *Lymantria dispar* in Yugoslavia, **327**; question of diapause in, **327**
Anastrepha, species of, on persimmon in Brazil, **446**; survey of data on natural enemies of species of, **516**; insecticides against, **446**
Anastrepha ludens (infesting grapefruits and mangos), in Mexico, **500, 582**; effects of γ-radiation on, **525**; fumigants

against, **500, 582**; chemosterilants for, **94**
Anatis ocellata, predacious on *Athalia rosae* in Germany, **684**
ancylivorus, *Macrocentrus*
ancylocerus, *Charips*
Aneflomorpha citrana, damaging orange in Arizona, **23**
Angelica Oil, as attractant for *Ceratitis capitata*, **326, 646**; in bait-sprays, **646**
Angitia (see *Nythobia*)
Angola, Bruchids in stored beans in, **300, 301**; *Xyleborus ferrugineus* in soil litter in, **377**; list of pests and beneficial insects in, **701**
angulatus, *Acinopterus*; *Blepharidopterus*
angusticeps, *Thrips*
angustifrons, *Aphycus* (*Metaphycus*)
Anilastus, parasitising *Plutella maculipennis* in Ceylon, **618**
Animert (see 2,4,5,4′-Tetrachlorodiphenyl Sulphide)
Anisodactylus rusticus, in peach orchards in Ontario, **664**; effects of DDT on populations of, **664**
Anisognathus csikii, destroying *Doliopygus dubius* in Ghana, **373**
Anisoplia spp., on cereals in Bulgaria, **190**
Anisoplia tempestiva, in Bulgaria, **190**; parasite of, in France, **195**
annulipes, *Caliroa*
Anobium punctatum (infesting timber), in Britain, **173, 643**; in New Zealand, **233**; effects of heat on, **431**; tests and uses of timber preservatives against, **110, 233, 683**; fumigants against, **233**
Anolis limifrons, destroying *Ceramidia butleri* in Costa Rica, **492**
Anomala solida, bionomics and food-plant range of, in Yugoslavia, **36**
Anomis flava (see *Cosmophila*)
Anomis sabulifera, on jute in E. Pakistan, **623**
antennata, *Nezara*
Antestiopsis lineaticollis ghesquierei, on coffee in Rwanda and Burundi, **53**; dusts against **53**
Anthaxia helvetica, on juniper in Austria, **683**
Anthocoris melanocerus, predacious on *Psylla pyricola* in British Columbia, **510, 666**; effects of sprays on populations of, **666**
Anthocoris nemorum (predacious on mites), in Austria, **65**; in Germany, **624**; bionomics of, **65**
Anthonomus, species of, on West Indian cherry in Puerto Rico, **573**; parathion spray against, **573**
Anthonomus cinctus (see *A. piri*)
Anthonomus grandis (on cotton in U.S.A.), effects of cotton extracts on activity of, **97, 269, 579**; effects of removal of shed forms on populations of, **370**; dietary requirements of, **497, 504**; effects of antimetabolites on growth of, **498**; reproductive potential of, **362**; determination of fecundity of, **82**; overwintering of, **582**; method of marking, **167**; traps for, **97**; use of recessive lethal genes for control of, **305**; susceptibility of, to *Beauveria bassiana*, **404**; repellents against, **363**; chemosterilants for, **94**; tests and uses of insecticides against, **86, 87, 265, 497**; timing of insecticides against first generation of, **95**; resistance or susceptibility to insecticides in strains of, **159**; absorption and metabolism of insecticides by, **148, 357**
Anthonomus piri (on pear), in Bulgaria, **416**; bionomics of, in Turkey, **35**; parasite of, **416**
Anthonomus pomorum, bionomics and parasites of, on apple in Bulgaria, **556**; measures against, **556**
Anthonomus pyri (see *A. piri*)
Anthrenus flavipes, in U.S.A., **371**; tests of antimetabolites for protection of woollen fabric against, **259**; toxicity of methyl bromide to eggs of, **371**
Anthrenus verbasci, tests of antimetabolite for protection of woollen fabric against, **259**
Antiaris africana, Coleoptera infesting logs of, **374**
Antibiotics, effects of: on aphids, **502**; on larval growth of *Hylotrupes bajulus*, **89**; on mites, **578**; phytotoxicity of, **578**; impregnation of timber with, **89**
Anticarsia gemmatalis, on groundnut in Brazil, **446**
Antigastra catalaunalis (on sesame), in India, **620**; in Sudan, **433**; varietal susceptibility of sesame to, **620**
Antigua, *Lixophaga diatraeae* in, **25**
Antimycin A, effects of: on aphids, **502**; on Tetranychids, **578**
antiqua, *Hylemya*
Antiresistant DDT, in sprays against *Popillia japonica*, **575**; composition of, **575**
antirrhini, *Gymnetron*
Antirrhinum majus, *Calophasia lunula* reared on, **603**
Antonina graminis, on grass in Florida, **272**; parasite of, **272**
antoninae, *Anagyrus*
Ants, on fruit trees in Sicily, **201**; infesting buildings, **334, 348**; social behaviour of, **164, 177**; associated with aphids,

201, 469, 693; associated with Coccids, **78, 115, 116, 201, 292, 419, 420, 524, 635**; effect of presence of, on parasitisation of *Coccus hesperidum*, **292**; review of associations between Homoptera and, **177**; destroying other insects, **24, 78, 121, 247, 394, 543, 609**; measures against, **115, 116, 121, 264, 334, 493, 521**; pupae of, in diet for *Attagenus megatoma*, **623**; labelled with radioisotopes, **348, 524**; paper chromatography of, **348**, behaviour in relation to systematics of, **348**; key to workers of, **272**

Anuraphis bakeri, in New Brunswick, **283**; in Washington, **7**; transmission of plant viruses by, **7**; cold-hardiness of, **283**

Anuraphis devecta, on apple in Britain, **63**

Anuraphis plantaginea (*roseus*) (on apple), in Britain, **63, 341**; in Italy, **210**; in Vermont, **655**; effects of temperature on fecundity and life-span of, **550**; tests and uses of insecticides against, **210, 341, 655**

Aonidiella aurantii (on *Citrus*), in California, **23, 77, 125**; in New South Wales, **181, 182**; in S. Rhodesia, **667**; natural enemies of, **23, 77, 125, 182**; indirect effect of fowls on populations of, **182**; sprays against, **181**

Aonidiella citrina, on *Citrus* in Florida, **22**; effects of cover crops on populations of, **22**

aonidum, auct., *Chrysomphalus* (see *C. ficus*)

Apamea basilinea, bionomics of, on cereals in Persia, **127**

Aparteles (parasitising Lepidoptera), in Costa Rica, **488, 492**; in Fiji, **121, 270**; in Quebec, **663**; effects of dieldrin sprays on populations of, **121**

Aparteles belippae, bionomics of, parasitising silkworms in India, **259**

Aparteles circumscriptus, parasitising *Lithocolletis blancardella* in Italy, **330**; parasite of, **330**

Aparteles flavipes, parasitising *Sesamia inferens* in Pakistan, **277**; effect of host food-plant on parasitism by, **277**

Aparteles fumiferanae, parasitising *Choristoneura pinus* in Wisconsin, **490**

Aparteles glomeratus, in Bulgaria, **190**; in China, **286**; established in New Zealand, **309**; in U.S.A., **309**; parasitising *Pieris* spp., **286, 309, 524**; diapause in *P. brassicae* in relation to parasitism by, **388**; parasitising other Lepidoptera, **190, 259**; study on nutrition of, **524**

Aparteles harrisinae, parasitising *Harrisina brillians* in U.S.A., **78**

Aparteles lacteicolor, parasitising *Margaronia unionalis* in Israel, **479**

Aparteles laevigatus, parasitising *Margaronia unionalis* in Israel, **479**; parasitising *Malacosoma neustria* in U.S.S.R., **72**

Aparteles nilae sp. n., parasitising *Coleophora prunifoliae* in U.S.S.R., **136**

Aparteles obscurus, parasitising *Choreutis bjerkandrella* in France, **338**

Aparteles plutellae, parasitising *Plutella maculipennis* in Ceylon, **618**

Aparteles rubripes, parasitising *Malacosoma neustria* in U.S.S.R., **72**

Aparteles scutellaris, parasitising *Phthorimaea operculella* in Bulgaria, **554**

Aparteles solitarius, parasitising Geometrids in Germany, **102**

Aparteles spurius, parasitising larvae of Lepidoptera in U.S.S.R., **72**; bionomics and parasite of, **72**

Aparteles tapatapaoanus, **121**

Aparteles xanthostigmus, parasitising *Archips xylosteanus* in Bulgaria, **190**

Apatele psi, on apple and plum in Bulgaria, **417**

Apatele rumicis, bionomics of, on fruit crops in Bulgaria, **189**

Apechthis ontario, parasitising *Choristoneura pinus* in Wisconsin, **490**

Aphanotrigonum trilineatum, on cereals in Sweden, **560**

Aphanus littoralis (see *Rhyparochromus*)

Aphelinus chrysomphali (see *Aphytis*)

Aphelinus mali (parasitising *Eriosoma lanigerum*), in Bulgaria, **192**; in Holland, **689**; introduced into Japan, **226**; introduced into S. Rhodesia from S. Africa, **120**; factors affecting parasitism of *E. lanigerum* by, **192**; toxicity of insecticides to, **192, 227**; sampling method for, **689**

Aphelinus semiflavus (parasitising aphids), in California, **88**; in Germany, **101**; colour variations in, **101**; toxicity of insecticides to, **88**

Aphid, Green (see *Myzus persicae*)

Aphidencyrtus aphidivorus, hyperparasite of *Chromaphis juglandicola* in California, **151**; parasitic on aphids in Hungary, **57**

Aphidencyrtus pulvinatus (*coccidicola*), parasitising Coccid and *Trioza erytreae* in Kenya and Eritrea, **230**; status and synonymy of, **230**

Aphidius dauci, parasitic on aphids in Hungary, **57**

Aphidius ervi (parasitising *Macrosiphum pisum*), in Bulgaria, **322**; in Czechoslovakia, **333, 633**; bionomics and

parasites of, **633**; host-range of, **633**; effects of sprays on populations of, **333**
Aphidius rapae (see *Diaeretus*)
Aphidius rosaphidis, attacking aphids in California, **352**
Aphidius smithi, parasitising *Macrosiphum pisum* in California, **88**; toxicity of insecticides to, **88**
Aphidius testaceipes, parasitising *Aphis maidis* in Oklahoma, **271**
aphidivorus, *Aphidencyrtus*
aphidovora, *Phaenobremia*
aphidovorus, *Lygocerus*
Aphids, of Austria, **67**; of New York, **349**; work on, as pests of crop plants in Turkey, **50**; in relation to infection of lucerne by *Phoma herbarum medicaginis*, **648**; and virus diseases of plants, **7, 11, 13, 57, 58, 60, 61, 62, 63, 79, 118, 124, 137, 140, 176, 179, 180, 207, 209, 242, 275, 347, 349, 350, 351, 356, 364, 385, 386, 395, 396, 397, 400, 401, 426, 428, 459, 494, 528, 535, 538, 563, 573, 574, 586, 612, 647, 649, 650, 651, 652, 654, 685, 693**; mechanism of virus transmission by, **275**; injection method in study of viruses in relation to, **573**; ants associated with, **201, 469, 693**; natural enemies of, **30, 57, 58, 120, 151, 187, 192, 204, 248, 270, 271, 306, 333, 412, 416, 459, 480, 518, 538, 568, 593, 605, 607, 626, 633**; review of Coccinellids in relation to biological control of, **58**; fungus diseases of, **92, 258**; feeding habits of, **522, 525**; review of feeding and nutrition of, **177**; life-cycles and overwintering of, **171, 179, 180, 243, 515**; cold-hardiness of, **283**; varietal susceptibility of plants to, **140, 266, 459**; osmotic pressure influencing distribution of, on plants, **251**; food-plant selection by, **302, 356, 532**; relation of alkaloid content of *Lupinus* to infestation by, **236**; honeydew produced by, **450, 648**; factors affecting populations of, **437, 550, 591**; effects of temperature on, **141, 225, 243, 269**; atmospheric electricity in relation to moulting of, **642**; migration of, **688**; high-altitude dispersal of, **437**; review of optical orientation of, **639**; chambers for study of flight patterns in, **271, 411**; synthetic diet for, **485**; effects of plastic cage materials on, **161, 162**; traps for, **179, 180, 204, 438**; trap-catches of, **426, 427**; other collecting and sampling methods for, **268, 367, 689**; effects of antibiotics on, **502**; DNC against winter eggs of, **196**; effects of sprays against *Leptinotarsa decemlineata* on populations of, **248**; resistance to insecticides in strains of, **262, 273**; biotypes of, **297, 427**; classification and new species of, **344, 702**; keys to species of, on *Citrus*, **272, 612, 640**
Aphidula (see *Aphis*)
Aphis coreopsidis, experimental transmission of banana viruses by, **649**
Aphis craccivora, on *Capsicum* in Hungary, **57**; on broad bean in Sudan, **650**; transmission of viruses by, **57, 650**; natural enemies of, **57**; sprays against, **57**
Aphis euonymi, on maize and *Euonymus* in Bulgaria, **321**
Aphis fabae, in Britain, **61, 111, 302, 469, 538**; in Bulgaria, **324, 556**; in Czechoslovakia, **480, 623, 685**; in France, **298**; in Germany, **204, 242, 355, 356, 428, 557**; in Hungary, **57, 58**; in Italy, **677**; in Poland, **186, 392, 475, 476**; in Sweden, **638**; in Yugoslavia, **129**; on beet, **61, 129, 186, 204, 242, 298, 324, 356, 392, 428, 475, 476, 538, 623, 638, 685**; on broad bean, **111, 298, 302, 356, 469, 556, 677**; types of feeding by, on broad bean, **522**; on maize, **557**; on potato, **58, 356**; on other plants, **57, 324, 356**; distribution of, on plants of *Euonymus europaeus* in relation to osmotic pressure, **251**; food-plant selection by, **356**; transmitting virus diseases of plants, **61, 242, 428, 538, 685**; bionomics of, **324**; feeding and other habits of, **356, 525**; factors affecting infestation of fields by, **302**; assessment of populations of, **111**; natural enemies of, **204, 480, 626**; protected by ants against predators, **469**; traps for, **204**; hemp and hemp extracts not repellent to, **392**; tests and uses of insecticides against, **51, 61, 129, 186, 204, 210, 242, 298, 428, 475, 476, 623, 677, 685**; toxicity of acaricides to, **424**; effects of sprays against *Leptinotarsa decemlineata* on predators and, **248**; used in tests of insecticides, **8, 521**; labelled with ^{182}Ta, **525**; *Cryptolaemus montrouzieri* reared on, **416**
Aphis frangulae, transmitting virus disease of potato in Germany, **395**; primary food-plants of, **395**; question of synonymy of, **395**
Aphis glycines, on soy bean in China, **286**; bionomics and primary food-plant of, **286**; insecticides against, **286**
Aphis gossypii, in Aden, **228**; in Argentina, **285**; in Brazil, **285**; in Ceylon, **618**; in Egypt, **29**; in Formosa, **612**; in Dutch Guiana, **438**; in Hungary, **58**; in India, **528**; in Kenya, **670**; in Morocco, **113**; in Nigeria, **118**; in Sudan, **650**; in

U.S.A., **13, 14, 176, 495, 651;** in Venezuela, **607;** on broad bean, **650;** and viruses of cacao, **118;** transmitting tristeza virus of *Citrus*, **176, 612;** on cotton, **29, 113, 228, 285, 495, 607, 612, 618, 670;** varietal resistance of cotton to, **29;** on melons, **13, 14, 285, 651;** on potato, **58;** transmitting other plant viruses, **13, 528, 649, 650, 651;** flight habits of, **438;** killed by low temperatures, **283;** *Hippodamia convergens* predacious on, **607;** insecticides against, **14, 285, 495, 612, 619, 670;** question of synonymy of, **395**

Aphis idaei, parasite of, in Czechoslovakia, **480;** varietal susceptibility of raspberry to, **459;** transmitting virus diseases of raspberry, **459**

Aphis maidis, in Canada, **1, 660;** in Denmark, **427;** in Germany, **202, 292;** in India, **530;** in Madagascar, **514;** in U.S.A., **13, 17, 271, 297;** on cereals, **1, 17, 202, 271, 292, 297, 427, 530, 660;** varietal susceptibility of barley to, **1, 271;** transmitting barley yellow-dwarf virus, **351;** on grasses, **660;** and virus diseases of melons, **13;** on sugar-cane, **514;** food-plant relations of biotypes of, **297;** parasitised by *Aphidius testaceipes*, **271;** insecticides against, **1, 17, 18, 530**

Aphis nasturtii, in Britain, **61;** in Germany, **395;** in Hungary, **57, 58;** in New Brunswick, **283, 366;** on *Capsicum*, **57;** on potato, **58, 61, 366, 395;** question of primary food-plant of, **395;** transmitting plant viruses, **57;** cold-hardiness of, **283;** natural enemies of, **57, 58;** insecticides against, **57, 61, 366**

Aphis pomi (on apple), in British Columbia, **140, 596;** in Bulgaria, **322;** in France, **298;** in Italy, **210, 677;** in Vermont, **677;** natural enemies of, **322, 624;** effects of antibiotics on, **502;** tests and uses of insecticides against, **141, 210, 298, 596, 655, 677**

Aphis rosae (see *Macrosiphum*)

Aphis sacchari, on broad bean in Sudan, **650;** question of transmission of viruses by, **650**

Aphis spiraecola, in Formosa, **612;** in Dutch Guiana, **438;** in U.S.A., **176;** transmitting tristeza virus of *Citrus*, **176, 612;** flight habits of, **438;** sprays against, **612**

Aphodius subterraneus, on mushrooms in Bulgaria, **322**

Aphodius tasmaniae, in pastures in S. Australia, **609;** fungus and other factors affecting populations of, **609**

Apholate (see 2,2,4,4,6,6-Hexa(1-aziridinyl)-2,4,6-triphospha-1,3,5-triazine)

Aphomia gularis, in stored products in Britain, **700**

Aphoxide (see Tris(1-aziridinyl)phosphine Oxide)

Aphrodes bicinctus, in Britain, **536;** in Czechoslovakia, **68;** grassland in relation to, **69;** transmitting virus diseases of plants, **69, 536**

Aphrophora saratogensis, in Canada, **24;** bionomics of, on pines in U.S.A., **24, 25;** natural enemies of, **24;** not infected by nematode and associated bacterium, **577;** measures against, **24, 25**

aphrophorae, *Ooctonus*

Aphthona, species of, in U.S.S.R., **516**

Aphycus, parasitic on *Ceroplastes sinensis* in Sicily, **198;** identity of species of, **372**

Aphycus angustifrons, parasitising *Coccus hesperidum*, **372;** established in Texas, **372;** formerly referred to as *Aphycus* C, **372**

Aphycus helvolus, moisture requirements of, **91**

Aphycus insidiosus, bionomics of, parasitising *Eulecanium corni* in U.S.S.R., **135, 136**

Aphycus luteolus, parasitising *Coccus hesperidum* in California, **292;** effects of ants on parasitism by, **292;** moisture requirements of, **91**

Aphycus maculipes, effects of DDT on populations of, parasitising *Pulvinaria vitis* in Ontario, **665**

Aphytis (parasitising Coccids), in India, **620;** in Italy, **328;** in Japan, **225**

Aphytis chrysomphali (parasitising Coccids), in California, **23;** in New South Wales, **182;** in Mediterranean area, **124, 125, 198;** in Persia, **124**

Aphytis citrinus, parasitising *Chrysomphalus dictyospermi* in Mediterranean area, **124**

Aphytis coheni, parasitising *Chrysomphalus dictyospermi*, **125**

Aphytis diaspidis, parasite of *Chrysomphalus bifasciculatus* in Japan, **225**

Aphytis fisheri, parasitising *Chrysomphalus dictyospermi*, **125**

Aphytis holoxanthus, parasitising *Chrysomphalus dictyospermi*, **125**

Aphytis lepidosaphes (parasitising *Lepidosaphes beckii*), in China and Formosa, **78;** introduced into U.S.A., **78, 372, 569, 570;** parasite of, **570;** integration of chemical measures with, **78**

Aphytis lingnanensis (parasitising Coccids), in China, **125;** in Mexico, **124;** introduced into U.S.A., **23, 125, 372;** moisture requirements of, **91**

Aphytis maculicornis (parasitising *Parlatoria*), in Persia, **353**; in Sicily, **198**; introduced into California, **353**; effects of insecticides on populations of, **353**, **354**
Aphytis melinus, introduced into California as parasite of Coccids, **23**, **125**
Aphytis mytilaspidis, parasitic on *Quadraspidiotus perniciosus* in Yugoslavia, **129**
Aphytis proclia (parasitising Coccids), in France, **130**; bionomics of, in U.S.S.R., **72**; in Yugoslavia, **129**; experiments with supplementary foods and, **72**; effects of DDT on populations of, **72**
apiatus, *Heilipus*
apicalis, *Sibine*
apiforme, *Trochilium* (*Aegeria*)
Apion apricans, bionomics of, on red clover in Finland, **641**
Apion assimile, bionomics of, on red clover in Finland, **641**
Apion carduorum, on globe artichoke in France, **338**; parasites of, **338**
Apion corchori, on jute in E. Pakistan, **622**
Apion trifolii, ecology and bionomics of, on *Trifolium* spp. in Finland, **641**
Apis indica, toxicity of pyrethrum marc to, **231**
Aplomya caesar (see *Zenillia*)
Apolychrosis schwerdtfegeri gen. et sp. n., on pine in Guatemala, **431**
Aporia crataegi (on fruit trees in U.S.S.R.), parasitised by *Apanteles spurius*, **72**; tests of *Bacillus thuringiensis* against, **134**, **135**; insecticides against, **134**, **135**
Apple, Lepidoptera on, in S. Africa, **111**, **112**; *Praxithea derourei* on, in Argentina, **646**; *Leptopius* spp. on, in S. Australia, **461**; pests of, in Austria, **65**, **67**, **458**, **472**, **473**; *Panonychus ulmi* on, in Belgium, **209**; pests of, in Britain, **62**, **63**, **209**, **210**, **304**, **339**, **340**, **341**, **559**; pests of, in Bulgaria, **186**, **187**, **189**, **190**, **192**, **321**, **393**, **415**, **417**, **554**, **556**; pests of, in Canada, **2**, **3**, **84**, **89**, **140**, **142**, **143**, **158**, **168**, **214**, **222**, **224**, **360**, **447**, **448**, **450**, **505**, **509**, **511**, **564**, **565**, **595**, **596**, **600**, **662**; *Panonychus ulmi* on, in Finland, **297**; pests of, in France, **59**, **246**, **426**, **546**, **552**; pests of, in Germany, **557**, **624**, **628**, **684**, **690**; pests of, in Greece, **60**; pests of, in Holland, **208**, **209**, **689**, **690**; pests of, in Italy, **37**, **38**, **39**, **194**, **208**, **210**, **289**, **298**, **330**, **543**, **629**, **677**; pests of, in Japan, **226**, **227**, **315**, **316**, **613**, **615**, **616**; *Quadraspidiotus* spp. on, in New Zealand, **181**, **446**; *Stephanitis pyri* on, in Persia, **128**; *Psylla mali* on, in Poland, **332**; pests of, in S. Rhodesia, **667**; *Cydia pomonella* on, in Rumania, **318**; *Typhlodromus setubali* found on, in Spain, **625**; pests of, in Switzerland, **40**, **636**; Lepidoptera on, in U.S.S.R., **134**, **135**, **644**; pests of, in U.S.A., **15**, **17**, **43**, **82**, **86**, **93**, **493**, **496**, **571**, **587**, **593**, **655**, **657**, **658**; pests of, in Yugoslavia, **326**; nature of damage by *Adoxophyes orana* and *Archippus oporanus* to, **559**; varietal susceptibility of, to *Eriosoma lanigerum*, **339**; competition between Tetranychids on, **600**; phenology of pests of, **557**; beneficial fauna of, **65**, **615**, **624**, **690**; *Venturia inaequalis* on, **448**; sampling methods for arthropods on, **367**, **593**; bronzing of leaves of, as measure of effectiveness of acaricides, **63**; systemic activity of insecticides in, **120**, **140**, **208**, **341**; tests of polybutenes on, **210**; persistence of insecticide deposits on, **484**, **501**; toxicity of insecticides to, **450**, **578**; contamination of adjacent crops by aircraft application of dusts to, **164**; (fruit), effects of *Leucoptera scitella* on keeping quality of, **544**; *Rhagoletis pomonella* in, **84**; insecticide residues on, **83**, **111**, **139**, **304**; penetration of, by dimethoate and metabolite, **45**; fumigation of, **84**, **89**, **90**, **361**; injured by methyl bromide, **89**; controlled-atmosphere storage of, **361**
Apple Scab (see *Venturia inaequalis*)
Apple Tortricid (see *Cydia pomonella*)
approximatus, *Kalotermes*
apricans, *Apion*
Apricot, *Aculus fockeui* causing leaf-spot of, in Austria, **67**; pests of, in Bulgaria, **189**, **190**, **393**, **418**; pests of, in California, **571**; *Ceratitis capitata* on, in Italy, **421**; *Argyrotaenia pulchellana* on, in Switzerland, **40**; *Sciaphobus squalidus* on, in Yugoslavia, **326**; toxicity of lime-sulphur to, **67**
Apricot, Japanese, aphids on, in Japan, **412**
Aprostocetus, species of, as egg-parasite of *Tragocephala*, **118**, **119**
Apterencyrtus microphagus (parasitising Coccids), in France, **130**; in Yugoslavia, **129**
Aptinothrips rufus, overwintering habitats of, in Britain, **169**
Aquilegia, *Conotrachelus anaglypticus* on, in Ohio, **400** (See also Columbine)
aquilonia, *Formica*
Arabia, *Phyllocnistis citrella* and other pests of *Citrus* in, **33**; lack of parasites of *P. citrella* in, **34**; *Schistocerca gregaria* in, **176**
Arachnis albescens, on banana in Costa Rica, **491**; parasite of, **492**

Araecerus fasciculatus, introduced into Italy on coffee beans from Brazil, **631**; hydrogen-cyanide fumigation against, **631**
Aralia, *Coccus hesperidum* on, in Italy, **545**
Aramite (see 2-Chloroethyl 2-(p-tert.-Butylphenoxy)-1-methylethyl Sulphite)
arator, *Heteronychus*
arborea, *Bryobia* (see *B. rubrioculus*)
Arborvitae (see *Thuja*)
Archangelica officinalis (see Angelica Oil)
Archippus oporanus, bionomics of, on apple in Britain, **62**; nature of damage to apple by, **559**; timing of sprays against, **62**
Archips argyrospilus, on apple in Canada, **2**, **3**, **222**; light-trap catches of, in California, **658**; use of life tables in study of fluctuations of, **2**; natural enemies of, **3**; sampling methods for, **222**
Archips cerasivoranus, influence of haemolymph of, on parasite fecundity, **568**
Archips podanus (see *Archippus oporanus*)
Archips xylosteanus, on red oak in Bulgaria, **190**; on apple in Japan, **227**; parasite of, **190**
Arctium minus, experiments with *Protoparce sexta* on, **303**
Areca catechu (Areca Palm), pests of, in India, **235**, **621**
Areca lutescens (see *Chrysalidocarpus*)
arecae, *Carvalhoia*
arenacearia, *Tephrina* (*Eubolia*)
Arenipses sabella, on date palm in Iraq, **540**
Argentina, cotton pests in, **285**, **702**; forest pests in, **645**, **646**; pests of fruit trees in, **399**, **646**; *Rachiplusia nu* on flax in, **646**; *Heliothis virescens* on tobacco in, **482**; grassshoppers in, **292**, **483**, **647**; distribution of *Schistocerca cancellata* in, **297**; beneficial insects in, **312**, **399**, **645**, **647**, **702**
argentinenis, *Tersilochus*
argillacea, *Alabama*
Argyresthia ephippella, bionomics and parasite of, on cherries in France, **296**; sprays against, **296**
Argyresthia laevigatella, bionomics and parasite of, on larch in U.S.S.R., **255**
Argyresthia pruniella, auct. (see *A. ephippella*)
Argyresthia thuiella, on *Thuja* in Connecticut, **76**; sprays against, **76**
Argyroploce lacunana, bionomics of, on strawberry in Germany, **242**; tests of insecticides against larvae of, **242**
Argyroploce schistaceana, measures against, on sugar-cane in Madagascar and Réunion, **514**
Argyroploce variegana, bionomics of, on fruit trees in Bulgaria, **554**
argyrospilus, *Archips*
Argyrotaenia citrana, light-trap catches of, in California, **658**
Argyrotaenia pulchellana, bionomics of, in France, **546**; in Switzerland, **40**; on fruit trees, **40**, **546**; on vines, **40**; sprays against, **546**
Argyrotaenia velutinana (in U.S.A.), on apple, **43**, **655**, **657**; on vines, **266**; bionomics of, **266**, **657**; natural enemies and virus disease of, **657**; synthetic diet for, **368**; insecticides against, **266**, **655**, **656**; resistance to insecticides in strains of, **657**
Arizona, pests of beet in, **274**; Cicadellids on grasses in, **98**; pests of lucerne in, **98**, **266**, **500**; aphids and virus diseases of melon in, **13**, **651**; *Aneflomorpha citrana* on orange in, **23**; *Phyrdenus muriceus* on tomato in, **23**; grasshoppers in, **500**, **584**; *Harrisina brillians* in, **78**; *Tribulus terrestris* in, **496**; attraction of insects to *Senecio longilobus* in, **516**; beneficial insects in, **78**, **496**
Arkansas, pests of cereals in, **274**, **655**; cotton pests in, **22**, **273**; *Euschistus servus* on lucerne in, **274**; pests of vegetables in, **273**, **274**, **361**; *Galleria mellonella* damaging honey-combs in, **654**; beneficial insects in, **22**, **274**
armata, *Hypogastrura*
armatus, *Diplohoplizes*; *Phloeosinus*
armicollis, *Magdalis*
armigera, *Dicladispa*; *Heliothis*
Armillaria mellea, attacking juniper in Austria, **683**
arnobia, *Thyrinteina*
Arrhenophagus chionaspidis, parasitic on *Aulacaspis rosae* in France, **130**
Artemia salina, used in bioassay of insecticides, **155**, **347**, **640**
Artichoke, Globe (see *Cynara*)
arvalis, *Hexamermis*
Asaphes californicus, hyperparasite of *Chromaphis juglandicola* in California, **151**
Asaphes vulgaris (hyperparasite of aphids), in Czechoslovakia, **633**; in Holland, **518**
ascalonicus, *Myzus* (*Rhopalomyzus*)
Ascorbic Acid, rôle of, in nutrition of cotton pests, **504**; in diet for *Diatraea saccharalis*, **8**
Ash, *Saperda carcharias* on, in Czechoslovakia, **250**; *Lymantria dispar* on, in U.S.S.R., **71**
Asolcus, species of, as egg-parasites of *Eurygaster integriceps*, **127**, **182**; in

U.S.S.R., **182**; effects of diet on fecundity of, **127**
Asparagus, *Platyparea poeciloptera* on, in France, **59**
Aspen (see *Populus tremula* and *P. tremuloides*)
Aspergillus, on copra, **121**; effects of, in diet of *Necrobia rufipes*, **121**
Aspergillus flavus, infesting insects, **150, 406, 522**; influence of γ-radiation and other physical factors on virulence of, **522**; fungicides against, **150, 151**
Aspergillus niger, larval development of *Pectinophora gossypiella* inhibited by, in artificial diets, **150**; fungicides against, **150, 151**
Aspidiotiphagus citrinus (parasitising Coccids), in Florida, **570**; in France, **130**; in New Zealand, **181**; in Sicily, **198**; in Yugoslavia, **129**
Aspidiotiphagus lounsburyi, parasitising *Lepidosaphes beckii* in Florida, **570**
Aspidiotus destructor, *Cryptognatha nodiceps* introduced into Fiji against, **58**
Aspidiotus hederae, on *Citrus* in Italy, **198, 208**; natural enemies of, **198**; systemic insecticides against, **208**
Aspidiotus perniciosus (see *Quadraspidiotus*)
Aspidistra elatior, *Chrysomphalus bifasciculatus* on, in Japan, **225**
aspidistrae, *Pinnaspis*
Aspilota, parasitic on *Rhagoletis cerasi* in Yugoslavia, **193**
Aspirators, for collecting small arthropods, **139, 367**
assectella, *Acrolepia*
assimile, *Amphimallon*; *Apion*
assimilis, *Ceutorhynchus*; *Panstenon*
assulta, *Heliothis*
Aster (see *Callistephus chinensis*)
atalantae, *Theronia*
ater, *Agrilus*; *Thysanus*
aterrimus, *Trachyostus*
Athalia rosae, on crucifers in Germany, **201, 202, 625, 684**; bionomics and ecology of, **202, 625**; determination of emergence of, **201**; natural enemies and fungus disease of, **684**; traps for, **201**
Atherigona, on sorghum in Sudan, **27**; varietal resistance of sorghum to, **27**; sprays ineffective against, **27**
Atherigona indica, on sorghum in Sudan, **433**
Atherigona parvipuncta, on wheat in S. Rhodesia, **125**
atlanticus, *Tetranychus*
Atomaria linearis, on beet in Germany, **132**; favoured by cultural practices, **132**; insecticides against, **132**
atra, *Phyllotreta*
atricollis, *Ageniaspis*
atricornis, *Brachistes*; *Phytomyza*
atripennis, *Aulacophora*
Atriplex, question of use of, as barrier crop against grasshoppers, **483**
atriplicis, *Trachea*
atrolineatus, *Bruchidius*
Atropa belladonna, *Agrotis ipsilon* on, in Jammu, **621**
atrupictella, *Eucordylea*
Attacus cynthia, multiplication of virus in pupae of, **204**
Attagenus megatoma (*piceus*), infesting woollen products, **259, 626**; adult habits of, **626**; diets for, **623**; tests of antimetabolites and insecticides against, **167, 259, 382**
Attapulgite, leaching of dieldrin from granules of, **502**
Atteva aurea, experiments with *Bacillus thuringiensis* and, **403**
aulacaspidis, *Adelencyrtus*
Aulacaspis cinnamomi (see *A. tubercularis*)
Aulacaspis mangiferae (see *A. tubercularis*)
Aulacaspis rosae, on raspberry in France, **130**; parasites of, **130**; other ecological factors regulating populations of, **130**
Aulacaspis tegalensis (see *Chionaspis*)
Aulacaspis tubercularis, on *Cinnamomum zeylanicum* in Java, **230**; on mango in S. Africa, Egypt, Ghana, India, Iraq, Kenya, Mauritius, S. Rhodesia and Zanzibar, **230**; synonymy of, **230**
Aulacophora, toxicity of pyrethrum marc to species of, **231**
Aulacorthum (see *Macrosiphum*)
aurantiaria, *Erannis*
aurantii, *Aonidiella*; *Prospaltella*; *Toxoptera*
aurea, *Atteva*
Aureomycin, effects of impregnation of timber with, on larval growth of *Hylotrupes bajulus*, **89**; and bactopeptone, **89**
auricularia, *Forficula*
auriferella, *Stathmopoda*
aurulenta, *Buprestis*
Australia, *Listroderes costirostris obliquus* in, **311, 312**; pests of *Eucalyptus* in, **105, 110, 608, 609**; pests of timber in, **444, 641**; outbreaks of *Chortoicetes terminifera* in, **312**; *Marasmia venilialis* in, **270**; *Phaulacridium vittatum* in, **443**; Trypetids in, **107, 310, 311**; beneficial insects in, **310, 311, 312, 444, 609**; virus disease of tomato in, **137, 138** (See also under the individual States)
Australia, South, pests of *Citrus* and other fruit trees in, **461**; pests of vines in, **182, 461**; *Aphodius tasmaniae*

infesting pastures in, **609**; outbreaks of *Chortoicetes terminifera* in, **313**; *Teleogryllus commodus* in, **443**; fungus disease of *A. tasmaniae* in, **609**
Australia, Western, *Desiantha maculata* on carrot in, **310**; *Eucalyptus* damaged by *Coptotermes* spp. in, **610**; parasites of *Dacus tryoni* introduced into, **311**
australianus, Dolichotetranychus
australicum, Trichogramma
australis, Monolepta
Austria, apple pests in, **65, 66, 67, 458, 472**; pests of nuts in, **295, 632**; pests of vines in, **65, 472, 473**; pests of other fruits in, **65, 67, 295, 472, 473, 632, 688**; pests of cereals in, **67, 296**; aphids on potato in, **688**; pests of other field crops in, **66, 293**; pests of ornamental and other plants in, **67, 295**; forest pests in, **293, 295, 394, 473, 683, 684**; Coleoptera attacking stored logs in, **432**; domestic pests in, **473, 632**; investigation on aphid fauna of, **67**; colour forms and distribution of *Hyphantria cunea* in, **133**; flight-year prediction of *Melolontha* spp. in, **473**; arthropod predators of Tetranychoid mites in, **65**; virus disease of *Cephalcia abietis* in, **684**
austriaca, Anisoplia; *Eurygaster*
Autographa gamma, in Austria, **293**; in Bulgaria, **188**; in Germany, **234**; on field crops, **188, 293**; bionomics of, **68**; effects of population density on survival and fecundity of, **30**; fungus infesting, **234**; insecticides against, **293**
autographus, Dryocoetes
auxiliaris, Chorizagrotis
avenae, Macrosiphum
Avocado, *Heilipus apiatus* on, in Florida, **272**; *Monolepta australis* on, in New South Wales, **106**; *Chrysomphalus dictyospermi* on, **124**; effects of fumigants on fruit of, **14**
avulsus, Barytychius
axyridis, Coccinella (*Harmonia*)
Azalea (see *Rhododendron*)
azaleella, Gracillaria
Azinphos-ethyl (in sprays), against aphids, **248**; against *Cydia pomonella*, **304, 340**; against *Panonychus ulmi*, **340**; residues of, in apple, **304**
Azinphos-methyl, against aphids, **89, 390, 678**; against Coccids, **5, 99, 103, 293**; against *Philaenus leucophthalmus*, **89, 148**; against other Hemiptera, **163, 285, 344, 503, 678**; against *Contarinia oregonensis*, **80, 367**; against *Rhagoletis*, **360, 656**; against other Diptera, **8, 605, 698**; against Curculionids, **86, 88, 89, 497**; against other Coleoptera, **153, 678**; against Hymenoptera, **76, 588**; against Noctuids, **85, 87, 113, 359, 627**; against Pyralids, **80, 82, 85, 86**; against Tortricids, **62, 90, 111, 266, 304, 340, 656, 678**; against other Lepidoptera, **80, 113, 359, 390, 499, 581, 669**; tests and uses of, against grasshoppers and locusts, **148, 621**; toxicity of, to *Periplaneta americana*, **8**; activation of, by tissue preparations from cockroach, **108**; against thrips, **12, 13, 285, 390**; against Tetranychids, **62, 287, 290, 340, 395, 552, 635, 678**; resistance to, in strains of *Panonychus ulmi*, **656**; against other mites, **396**; against cotton pests, **113**; effects of, on beneficial arthropods, **2, 80, 88**; effect of temperature on efficiency of, **678**; in dusts, **87, 359, 656**; in granules, **605, 698**; in sprays, **2, 5, 12, 13, 62, 76, 80, 82, 85, 86, 87, 88, 89, 90, 95, 99, 111, 113, 148, 153, 163, 266, 285, 287, 290, 304, 340, 344, 359, 360, 367, 390, 395, 396, 497, 499, 503, 552, 581, 621, 627, 669, 678**; as deposit, **499**; seed treatment with, **605**; trunk applications of, **103**; as plant dip, **293**; soil treatment with, **605, 698**; systemic action of, in cotton, **467**; tainting of tobacco by, **137**; toxicity of, to lucerne, **148**; residues of, in plants, **90, 95, 111, 304, 467**; tolerance limits for, **111, 359**; bioassay of, **90**; labelled with ^{32}P, **467**; and DDT, **12, 13, 87, 113, 628**; and heptachlor, **148**
Azobenzene, toxicity of, to stages of *Tetranychus telarius*, **691**
Azochis gripusalis, measures against, on fig in Brazil, **308**
Azotus chionaspidis, parasite of *Chrysomphalus bifasciculatus* in Japan, **225**
Azotus matritensis, bionomics of, as hyperparasite of Coccids in Italy, **630**

B

baccarum, Dolycoris
baccettii, Typhlodromus
Bacillus, in *Pseudaletia unipuncta*, **402**
Bacillus cereus, against *Choristoneura fumiferana*, **659, 660**; strain of, isolated from *Trichiocampus irregularis*, **659**
Bacillus cereus galleriae, infecting Lepidoptera, **134, 135**; and DDT, **134, 135**
Bacillus thuringiensis, infecting Lepidoptera, **15, 17, 50, 52, 69, 86, 95, 129, 130, 245, 308, 360, 392, 403, 404, 406, 481, 506, 550, 618, 636, 674**; ineffective against Lepidoptera, **360, 655**; larval age related to resistance to, **130**; of little effect on *Tribolium castaneum*,

674; *Nasonia vitripennis* unharmed by, 690; laboratory experiments with, 50, 69, 94, 95, 129, 130, 245, 403, 404, 406, 481, 506, 618; field use of, 15, 17, 50, 69, 86, 129, 130, 308, 360, 392, 481, 550, 636, 655, 674; toxic principle in, 50; commercial preparations of spores of, 15, 86, 94, 308, 360, 392, 406, 506, 690; question of mammalian toxicity and hazards of use of, 481, 674; effects of spray additives on effectiveness of, 52, 94, 95; contamination of formulations of, by chlorinated hydrocarbons, 172; integrated use of insecticides or viruses with, 552; and DDT, 129; effects of malathion on, 674; strains of, 245, 459

Bacillus thuringiensis dendrolimus, infecting Lepidoptera, 75, 76; laboratory experiments with, 75, 76; field use of, 75, 76; commercial preparations of spores of, 75; effects of low temperatures on, 76

Bacillus thuringiensis thuringiensis, infecting Lepidoptera, 151, 659; infecting Tenthredinids, 659; laboratory experiments with, 659; field use of, 151, 659; commercial preparations of spores of, 151, 659, 660; effects of rainfall on, 660

Bacteria, relation of arthropods to, on plants, 118, 255, 276, 285, 384, 409; pathogenicity of, to vectors, 295; associated with nematodes, 577; survey of data on effects of insecticides on, in soil, 686; rôle of, in metabolism of aldrin, 582; (entomogenous), in Coleoptera, 252, 482, 603; filtrates of, in experiments against *Anthonomus grandis*, 363; infecting Lepidoptera, 401, 402, 406, 590; review of factors affecting use of, 177; integrated use of insecticides or viruses with, 552; method of injection of, 590; preservation of, 235 (See also *Bacillus*, *Erwinia*, *Serratia*, *Streptococcus* and *Xanthomonas*)

Bactopeptone, effects of impregnation of timber with, on larval growth of *Hylotrupes bajulus*, 89; and aureomycin, 89

Bactromyia fransseni, parasitising *Nacoleia octasema* in New Britain, 671

baculi, *Curculio*

badius, *Xyleborus* (see *X. torquatus*)

Bagous, on *Trapa bispinosa* in India, 414

Bagrada cruciferarum, on crucifers in India, 101; new parasite of, 101

Bags, protection of fruits with, against pests, 526, 616; types of, in relation to treated seeds, 428; plastic liners for, 668 (See also Sacks)

baicalicus, *Ips* (*Pityogenes*)

Bait-sprays, for Trypetids, 111, 126, 329, 646

Bait-traps, use of female sex attractant in, for *Lobesia botrana*, 681

Baits, for ants, 264, 493; for Coleoptera, 451, 579; effects of anticoagulants in, on *Tribolium confusum*, 21; for earwigs, 165; for Lepidoptera, 15, 359, 526, 587, 657; for Trypetids, 326, 360, 526, 646; for other Diptera, 686, 692; for locusts, 440; for *Gryllotalpa gryllotalpa*, 418; for parasites, 71, 271; sex attractant in, 451; chemosterilant in, 692; applied by aircraft, 493

bajulus, *Hylotrupes*

bakeri, *Anuraphis* (*Nearctaphis*); *Pseudococcus* (see *P. maritimus*)

Bakeries, insects in, 634, 637; measures against insects in, 173

Bakthane, spore-preparation of *Bacillus thuringiensis* (*q.v.*), 308, 659

Balaninus elephas (see *Curculio*)

Balclutha neglecta (see *Nesosteles*)

Balsam Fir (see *Abies balsamea*)

balsamiferae, *Pemphigus*

balteata, *Diabrotica*

balteatus, *Syrphus* (*Epistrophe*)

Bamboo (Stored), treatment of, against *Dinoderus ocellaris* in India, 256

Banana, pests of, in Colombia, 409; pests of, in Costa Rica, 408, 409, 487, 491, 492; *Ceramidia viridis* on, in Ecuador, 482; pests of, in Honduras, 45, 409, 647; *Nacoleia octasema* on, in Pacific Is., 671; *N. octasema* on, in Papua and New Guinea, 670; experiments with aphids and virus disease of, in Puerto Rico, 649; pests of, in Venezuela, 409; insects transmitting bacterial wilt of, 408, 409; other pests of, 440; question of retention of aqueous suspensions on leaves of, 52; in rearing medium for *Dacus* spp., 310

Bands, against *Argyrotaenia pulchellana*, 40; against *Cryptococcus fagi*, 103; treated with insecticides, 103 (See also Adhesive Bands)

banian, *Hieroglyphus*

banksi, *Eutetranychus*

banksianae, *Neodiprion pratti*

Barathra brassicae (see *Mamestra*)

Barbados, pests of sugar-cane and sorghum in, 25, 26, 648; beneficial insects in, 25, 26, 279

Barbara colfaxiana, bionomics of, on Douglas fir in Idaho, 576

Barbara osmana, infesting cedar cones in Turkey, 430

barbita, *Magdalis*

Barichneumon, parasitising *Pennisetia marginata* in British Columbia, **595**
Barium Polysulphides, in sprays against Coccids, **289, 330**
Barium-titanate Transducers, use of, against *Ostrinia nubilalis*, **439**
Bark-beetles, in Ghana, **346**; factors affecting infestation by, **220, 447**; survey of data on attraction of, to timber, **639**; injurious fungi spread by, **345**; flight habits of, **597**; colour preferences of, **693**; as beneficial insects, **537**; natural enemies of, **70, 251, 254, 463, 507, 702**; diseases of, **252**; other factors affecting populations of, **327, 465, 702**; production of sex attractant by, **450**; attractants for, **354**; traps for, **69, 465, 693**; measures against, **168, 183, 252, 345, 374, 432, 465**; sampling methods for, **465, 572**; method of rearing, **452**; new species of, **702**; (*Dryocoetes*), key to N. American species of, **488**
Barley, pests of, in Bulgaria, **190, 392**; pests of, in Canada, **1, 2, 572, 599, 605**; *Aphis maidis* on, in Denmark, **427**; *Oscinella frit* on, in Germany, **686**; *A. maidis* on, in I. dia, **530**; *Nematocerus* sp. on, in Kenya, **27**; aphids on, in Sweden, **563**; *Rhopalosiphum padi* on, in Switzerland, **60**; *Elachiptera cornuta* on, in U.S.S.R., **254**; pests of, in U.S.A., **268, 269, 271, 350, 351, 652**; aphids in relation to virus diseases of, **60, 140, 350, 351, 563, 573, 574, 652**; effects of stage of development of, on injury by *A. maidis*, **1**; varietal susceptibility of, to insects, **1, 140, 269, 271, 605**; varietal susceptibility of, to viruses, **140, 651**; effect of sowing date on infestation of, **392**; toxicity of insecticides to, **27**; toxicity of plastic cage materials to, **161**
Barley (Stored), effects of, on weight and fecundity of *Sitophilus* spp., **253**; sorption of methyl bromide by, **85**
Barley Groats, effects of, on weight and fecundity of *Sitophilus* spp., **253**
barnesi, Tricholaba
barri, Macrosiphum
Barytychius, key to species of, **173**
Barytychius avulsus, bionomics of, on wheat, **173, 174**; introduced into Italy from Africa, **173**; measures against, **174**
basalis, Coccophagus
basilinea, Apamea (*Hadena*)
basqueela, Stegasta
bassamensis, Tragocephala
Basudin and Basudin R (see Diazinon)
Batocera rufomaculata, bionomics of, on fig in Israel, **464**
Bats, use of pulses of, in light-traps for Lepidoptera, **453**
Bayer 4741 (see O,O-Dimethyl S-(2-Ethylsulphinyl-1-methyl)ethyl Phosphorothioate)
Bayer 5006 (see Isopropoxyphenyl Methylcarbamate)
Bayer 13242 (see O,O-Diethyl Phosphorazidothioate)
Bayer 16574 (see 2-Chloroethyl 2,2-Dichlorovinyl Ethyl Phosphate)
Bayer 16900 (see O,O-Diethyl O-(Ethoxycarbonylmethylthio)ethyl Phosphorothioate)
Bayer 16948 (see O,O-Diethyl O-2-(sec.-Butoxymethylthio)ethyl Phosphorothioate)
Bayer 18510 (see O,O-Dimethyl S-(α-Ethoxycarbonylbenzyl) Phosphorothioate)
Bayer 18780 (see O,O-Dimethyl S-p-Chlorobenzyl Phosphorodithioate)
Bayer 18786 (see O,O-Diisopropyl S-p-Chlorobenzyl Phosphorodithioate)
Bayer 19596 (see O,O-Diethyl S-Ethoxycarbonycarbamoylmethyl Phosphorodithioate)
Bayer 19641 (see O,O-Diethyl S-(α-Cyanobenzyl) Phosphorodithioate)
Bayer 20743 (see Ethyl S-Ethylthiomethyl Xanthate)
Bayer 25141 (see O,O-Diethyl O-p-Methylsulphinylphenyl Phosphorothioate)
Bayer 29493 (see Fenthion)
Bayer 30749 (see O-Ethyl O-(p-Ethylsulphinylphenyl) Methylphosphonothioate)
Bayer 30911 (see O-Methyl O-2,4-Dichlorophenyl Methylphosphonothioate)
Bayer 31757 (see 4′-Chloro-2-nitro-4-(trifluoromethyl)diphenylamine)
Bayer 32651 (see 3-Methyl-4-methylthiophenyl Methylcarbamate)
Bayer 37344 (see 4-Methylthio-3,5-xylyl Methylcarbamate)
Bayer 38156 (see O-Ethyl S-p-Methylphenyl Ethylphosphonodithioate)
Bayer 38920 (see 6,7,8,9,10,10-Hexachloro-1,5,5a,6,9,9a-hexahydro-3-methyl-6,9-methano-2,4-benzodioxepin)
Bayer 39007 (see o-Isopropoxyphenyl Methylcarbamate)
Bayer 41831 (see O,O-Dimethyl O-3-Methyl-4-nitrophenyl Phosphorothioate)
Bean Beetle, Mexican (see *Epilachna varivestis*)
Beans, pests of, in Bulgaria, **394, 418, 556**; *Melanagromyza phaseoli* on, in

Egypt, **29**; mosaic virus of, in India, **649**; *Aphis fabae* on, in Italy, **677**; pests of, in U.S.A., **7, 19, 22, 273, 365, 487, 502**; glycosides in relation to selection of, by *Epilachna varivestis*, **575**; varietal susceptibility of, to *Lygus lineolaris*, **487**; *Macrosiphum caraganae* not surviving on, **507**; *Tetranychus telarius* on, **203**; insects in relation to virus diseases of, **7, 649**; seed treatment of, **418**; systemic activity and metabolism of fenthion in, **696**; trichlorphon residues on, **585**; effects of insecticides on, **418, 556**

Beans (Stored), Coleoptera in, **252, 300, 301**; treatments of, **300, 301**; effect of fumigation on flavour of, **301**

Beans, Broad, *Aphis fabae* on, in Britain, **111, 302, 469**; *A. fabae* on, in France, **298**; aphids on, in Germany, **356, 427**; *Gymnoscelis pumilata* on, in Italy, **544**; aphids and virus diseases of, in Sudan, **650**; pests of, in U.S.A., **7, 649**; types of feeding by *A. fabae* on, **522**; used in experiments on food-plant selection by *Brevicoryne brassicae*, **532**; *Macrosiphum caraganae* not surviving on, **507**; poor survival of *Empoasca lybica* on, **126**; Hemiptera and virus diseases of, **7, 126, 349, 401, 649, 650**; absorption and translocation of insecticides by, **45, 299**

Beans, Lima (see Lima Beans)

Beans, Mungo (see *Phaseolus mungo*)

Beauveria, infesting Lepidoptera in Canada, **221, 659**; infesting *Melolontha* in Switzerland, **482**; infesting *Sesamia cretica* in Yugoslavia, **394**

Beauveria bassiana, infesting *Stephanoderes hampei* in Ivory Coast, **435**; infesting *Cydia pomonella* in Rumania, **319**; infesting insects in U.S.A., **5, 351, 603**; infesting other insects, **135, 404, 522**; effects of insecticides on development of, **393**; influence of γ-radiation and other physical factors on virulence of, **522**; and DDT, **135**

Beauveria globulifera, infesting *Aegeria tipuliformis* in Czechoslovakia, **333**; infesting *Cydia pomonella* in Moldavia, **135**

Beauveria rileyi, infesting *Plusia eriosoma* in Ceylon, **618**

beckii, *Lepidosaphes*

Bedellia ipomoeae, sprays against, on sweet potato in Fiji, **121**; effects of sprays on natural enemies of, **121**

Beech, pests of, in Canada, **567, 569**; *Cryptococcus fagi* on, in Germany, **102, 103**; *Boarmia bistortata* on, in Holland, **241**; *Podisma collina* on, in Yugoslavia, **326**; question of relation of *C. fagi* to necrosis of, **103**; *Ptilinus pectinicornis* infesting timber of, **467**

Bees, Honey, pollination by, **179, 445**; susceptibility of, to infestation by *Acarapis* spp., **589**; *Geotrichum candidum* isolated from, **350**; *Galleria mellonella* damaging combs of, **588, 589, 654**; effects of insecticides on, **51, 134, 191, 209, 210, 246, 323, 459, 589**; absorption of Ruelene by, **148**; analysis of Sevin residues in, **516**; resistance to chlorinated hydrocarbons in strains of, **95**; used in experiments with cotton extracts and *Anthonomus grandis*, **97**

Bees, Indian Honey (see *Apis indica*)

Bees, Wild, pollinating blueberry in New Brunswick, **43**; toxicity of calcium arsenate to, **43** (See also *Bombus*, *Eulaema*, *Megachile* and *Trigona*)

Beet, pests of, in Alberta, **145, 489, 597, 698**; aphids on, in Britain, **61, 62, 210, 302, 385, 386, 535, 538**; pests of, in Bulgaria, **321, 324, 478**; pests of, in Czechoslovakia, **623, 685**; pests of, in Denmark, **398, 427**; virus disease of, in Republic of Ireland, **386**; *Aphis fabae* on, in France, **298**; pests of, in Germany, **132, 204, 241, 242, 356, 428, 429, 623**; *Tetranychus telarius* on, in Israel, **635**; weevils on, in Italy, **195, 331, 701**; pests of, in Poland, **186, 391, 392, 475, 476**; pests of, in Rumania, **320**; pests of, in Sweden, **637**; pests of, in U.S.A., **11, 92, 274, 317, 385, 386, 494, 650**; *A. fabae* on, in Yugoslavia, **129**; aphids and virus diseases of, **11, 61, 62, 242, 385, 386, 428, 535, 538, 574, 685**; *Circulifer tenellus* transmitting virus disease of, **650**; as food-plant of *Macrosiphum euphorbiae*, **471**; infestation by *Atomaria linearis* increased by early sowing of, **132**; effects of virus of, on feeding by *Myzus persicae*, **494**; effects of defoliation on yields of, **637**; seed and other systemic treatments of, **61, 242, 274, 698**; insecticide residues in, **61, 266, 274, 489, 585**; effects of insecticides on, **61, 320, 698**; (stored), methyl-bromide fumigation of, against aphids, **62**

behrensiella, *Itoplectis*

Belgium, *Panonychus ulmi* on apple in, **209**; Agromyzids on chicory in, **52**; virus diseases of tobacco in, **207**

belippae, *Apanteles*

Bembidion lampros, predacious on *Hylemya brassicae* in England, **694**

Bemisia tabaci (*gossypiperda*), in W. Africa, **302**; in Morocco, **113**; in

Puerto Rico, **649**; in Sudan, **105, 229**; on cotton, **105, 113, 229**; on *Dolichos lablab*, **105, 650**; on other plants, **105, 649**; factors affecting food-plant selection by, **302**; relation of, to virus diseases, **649, 650**; use of, in evaluation of insecticides, **229**; characters distinguishing new Aleyrodid from, **105**
Bentonite, Bruchids in stored beans killed by, **300**
Bentox (see BHC)
Benzothiazyldisulphide, in Niacide M (*q.v.*), **493**
Berberis vulgaris, *Aphis fabae* on, in Bulgaria, **324**
Bergoldiavirus, **204, 702**
Bergoldiavirus clistorhabdion, **657**
berlesei, *Prospaltella*
berlesiana, *Prolasioptera*
Berseem (see *Trifolium alexandrinum*)
Beskia aelops, parasitic on *Oebalus pugnax* in Texas, **83**
Bessa harveyi (see *Ptychomyia selecta*)
betae, *Pegomyia*; *Pemphigus* (see *P. populivenae*)
Betaine, in diet for *Anthonomus grandis*, **498**
Betula (see Birch)
Betula alleghaniensis (*lutea*), **221**
Betula papyrifera, **221**
BHC, against aphids, **30, 187, 271, 286, 341, 390, 424, 530, 547**; against Mirids, **117, 440, 462, 621**; against other Hemiptera, **30, 34, 50, 148, 157, 234, 391, 441, 620, 677**; ineffective against *Carbula pedalis*, **372**; against Cecidomyiids, **131, 132, 367, 384, 416, 550**; against *Hylemya* spp., **108, 345, 422, 478**; against *Psila* spp., **211, 556, 559**; against Trypetids, **111, 187, 196, 611**; against other Diptera, **8, 76, 77, 416, 425**; ineffective against *Melanagromyza phaseoli*, **29**; susceptibility or resistance to, in Diptera, **108, 611**; against Curculionids, **8, 9, 27, 56, 69, 156, 174, 192, 195, 245, 320, 327, 424, 548, 549**; resistance to, in strains of *Anthonomus grandis*, **159**; against Elaterids, **260, 394**; against Scolytids, **168, 183, 252, 345, 371, 432, 465**; ineffective against *Xyleborus fornicatus*, **673**; against other Coleoptera, **66, 106, 132, 168, 191, 211, 233, 246, 299, 320, 323, 324, 374, 380, 398, 428, 431, 432, 441, 475, 476, 478, 514, 519, 680, 683**; effects of sublethal doses of, on *Leptinotarsa*, **475**; against Noctuids, **30, 34, 112, 256, 293, 322, 323, 414, 611, 677**; against Pyralids, **15, 16, 49, 85, 86, 390, 417, 477, 514, 616, 637**; against Tortricids, **134, 247, 318, 319, 327, 416, 548**; against other Lepidoptera, **34, 76, 77, 134, 137, 320, 331, 390, 477, 498, 529, 544, 547, 676**; ineffective against Lepidoptera, **119, 137, 194**; against sawflies, **134**; against grasshoppers and locusts, **148, 257, 296, 528, 621**; toxicity of, to *Periplaneta americana*, **8**; penetration of cockroach integument by, **615**; against *Thrips tabaci*, **188, 390**; toxicity of, to termites, **236, 251, 619**; against mites, **134, 332**; ineffective against *Tetranychus* spp., **119, 670**; question of effects of, on fecundity of *T. telarius*, **206**; effects of, on beneficial arthropods, **30, 65, 252**; comparative toxicity of, to arthropods, **155**; use of, in determining insect fauna of bitterbrush, **580**; in aerosols, **134, 187, 324, 372, 440, 549, 637**; in bait-sprays, **111**; in dusts, **27, 34, 49, 56, 66, 69, 106, 112, 174, 191, 192, 194, 206, 252, 257, 286, 301, 320, 322, 323, 324, 331, 345, 371, 416, 417, 418, 425, 431, 440, 441, 475, 477, 478, 519, 541, 559, 670, 676**; in granules, **156, 371**; in sprays, **9, 29, 30, 34, 49, 50, 65, 69, 76, 77, 85, 112, 119, 131, 132, 137, 148, 168, 183, 187, 211, 229, 234, 245, 246, 247, 258, 267, 271, 286, 296, 318, 319, 327, 331, 332, 341, 345, 367, 371, 374, 390, 391, 416, 422, 440, 441, 462, 465, 476, 498, 514, 519, 529, 547, 548, 550, 559, 580, 616, 620, 621, 670, 673, 677, 680**; as deposit, **327, 549**; persistence of deposits of, **616**; seed treatment with, **27, 28, 66, 211, 286, 345, 394, 418, 425, 428, 431, 556, 572**; effects of storage on seed treated with, **428**; applied in transplanting water, **15, 16**; treatment of planting material with, **260, 345**; treatment of mushroom beds with, **384**; treatment of nests with, **619**; soil treatment with, **9, 27, 188, 191, 256, 257, 299, 331, 345, 398, 416, 475, 514, 544, 616**; as smoke, **373, 637**; treatment of logs or timber with, **168, 233, 345, 374, 432, 683**; uses of, against pests of stored products, **301, 541, 637**; vapour toxicity of, **440, 498**; systemic activity of, **187, 616, 617**; solutions of, **183, 187, 233, 251, 683**; emulsified solutions of, **168, 183, 245, 258, 323, 324, 327, 345, 422, 462, 498, 547, 549, 580, 611, 616, 621**; in suspensions, **282, 619**; tainting of fruits and vegetables by, **187, 211**; tainting of tobacco by, **137**; toxicity of, to plants, **27, 211, 258, 301, 320, 345, 384, 418, 572, 580**; development of *Beauveria bassiana* inhibited by, **393**; residues of, in plants and plant products, **267, 556, 637**; residues of, in eggs and tissues of predatory birds,

642; distribution and metabolism of, in mammals, 467; tolerance limit for, 556; labelled with ^{14}C, 615, 617; analysis and bioassay of, 282, 348, 556; and Cereclor, 229; and DDT, 29, 30, 66, 69, 85, 106, 112, 132, 134, 191, 192, 229, 247, 252, 293, 320, 322, 323, 324, 327, 341, 417, 477, 478, 670, 676, 680; and dieldrin, 131, 132; and fertiliser, 27; and fungicides, 394; and oil, 324, 432, 465; and parathion, 296, 331; and pinenes, 393, 476; and saltpetre, 475; and sulphur, 30; and thiram, 66; as lindane, 8, 9, 15, 29, 76, 111, 131, 132, 137, 148, 155, 156, 195, 206, 245, 246, 247, 258, 260, 267, 271, 282, 299, 318, 319, 320, 322, 323, 327, 331, 332, 345, 348, 390, 398, 414, 417, 422, 424, 425, 428, 431, 441, 465, 475, 476, 498, 514, 528, 529, 541, 547, 548, 580, 611, 616, 620, 621, 637, 673, 677; α isomer of, 236, 615, 683; β isomer of, 236, 615, 683; γ isomer of, 8, 9, 15, 16, 27, 29, 34, 65, 66, 76, 77, 86, 108, 111, 112, 117, 119, 131, 132, 137, 148, 155, 156, 168, 174, 187, 195, 196, 206, 211, 229, 233, 236, 245, 246, 247, 251, 258, 260, 267, 271, 282, 286, 293, 299, 301, 318, 319, 320, 322, 323, 324, 327, 331, 332, 345, 348, 374, 380, 384, 385, 390, 391, 394, 398, 414, 417, 422, 424, 425, 428, 431, 441, 462, 465, 475, 476, 498, 514, 528, 529, 530, 541, 547, 548, 556, 580, 611, 615, 616, 620, 621, 637, 642, 673, 676, 677, 683; δ isomer of, 236, 683

Bhendi (see *Hibiscus esculentus*)

Bibio hortulanus, infesting potatoes in Germany, 685

bicarinata, Stiroma (*Criomorphus*)

bicincta, Prosapia

bicinctus, Aphrodes

bicolor, Hypolithus; *Nupserha*; *Oligonychus*

Bidens pilosa, Thrips nigropilosus on, 436

Bidrin (see Dimethyl 1-Dimethylcarbamoyl-1-propen-2-yl Phosphate)

bifasciata, Comperiella

bifasciatus, Coraebus (see *C. fasciatus*)

bifasciculatus, Chrysomphalus

biguttatus, Laemophloeus

biguttula, Empoasca (*Chlorita*)

biguttulus, Cremastus (see *C. flavoorbitalis*)

bilineata, Aleochara

bilituratus, Melanoplus

bimaculatus, Gryllus

Bindweed (see *Convolvulus arvensis*)

binotalis, Crocidolomia

binotata, Cylindromyia

binotatus, Ommatissus

Bioassay, of insecticides, 37, 39, 90, 108, 208, 303, 347, 369, 424, 460, 468, 502, 521, 556, 640

bioculatus, Perilloides (*Perillus*)

Biological Control, Australia and New Guinea as sources of parasites and predators for, 444; (of insects), reviews of status and development of, 58, 195; orientation of parasites in relation to, 639; climatic conditions in relation to, 389; integration of chemical control with, 78, 104, 238, 689–691; definition of terms in, 551; in book on pests of crops in hot climates, 238; (of noxious plants), 456, 495, 508, 519, 603

Biolysia tristis, bionomics of, parasitising *Hypera punctata* but not congener in U.S.A., 148

biplaga, Earias

biplagiatus, Pantorhytes

bipunctata, Adalia (*Coccinella*)

bipustulatus, Chilocorus

Birch, pests of, in Canada, 221, 284; *Fenusa pusilla* on, in Connecticut, 16, 76; Lepidoptera on, in U.S.S.R., 73, 74; die-back of, in relation to populations of *Choristoneura fumiferana*, 284; development of *Cryptorhynchus lapathi* on, 337; systemic treatment of, with insecticides, 16

Birds, as pests of stored grain, 173; destroying noxious insects, 3, 74, 296, 394, 448, 609, 657; question of effects of DDT on, 656; insecticide residues in eggs and tissues of predatory, 642

Birdsfoot Trefoil (see *Lotus corniculatus*)

Bis(p-chlorophenylthio)propane, toxicity of, to stages of *Tetranychus telarius*, 9

Biscuits, infested by *Tyrophagus putrescentiae*, 184

bisselliella, Tineola

bistortata, Boarmia (*Ectropis*)

Bitterbrush (see *Purshia tridentata*)

bivittatus, Coccophagus; *Melanoplus*

bjerkandrella, Choreutis

Blackberry, *Aceria essigi* on, in Austria, 632; *Typhlodromus setubali* found on, in Spain, 625; *A. essigi* on, in Switzerland, 40; *Panonychus* sp. on, in Virginia, 19 (See also *Rubus*)

blancardella, Lithocolletis

blanchardii, Parlatoria

blanda, Eurema

Blastophagus piniperda (see *Myelophilus*)

Blastothrix confusa, bionomics and parasite of, parasitising *Eulecanium corni* in U.S.S.R., 135; effects of DDT on populations of, 136; question of synonymy of, 135

Blastothrix ilicicola, question of *B. confusa* as synonym of, 135

Blastothrix sericea, established in Canada as parasite of *Eulecanium coryli*, **507**
blastovora, *Eucordylea*
Blattella germanica, knockdown activity of antimetabolites against, **260**; toxicity of phosphorus compounds to, **494**; insecticide penetration of integument of, **495**; development of resistance to insecticides in strains of, **300**
Blepharidopterus angulatus, predacious on *Cydia pomonella* in Nova Scotia, **225**
Blepharipoda scutellata (see *Sturmia*)
Blondelia nigripes (parasitising Lepidoptera), in Germany, **102**; bionomics of, in U.S.S.R., **71**
Blowflies, treatment of boxed fish with pyrethrins against, **231**
Blueberry (in New Brunswick), cutworms on, **569**; pollinated by bumble bees, **43**
Bluegrass (see *Poa pratensis*)
Boarmia bistortata, on forest trees in Holland, **241**; parasites of, **241**; DDT sprays against, **241**
Boarmia crepuscularia, on conifers in British Columbia, **217, 449, 506**; tests of *Bacillus thuringiensis* against, **506**; DDT against, **217, 450**
boas, *Oryctes*
boetica, *Cosmolyce* (*Lampides*)
bohemica, *Sturmia* (*Drino*)
Bolbocephalus mechowi, destroying *Trachyostus aterrimus* in Ghana, **376**
Bollnäs Disease, association of arthropods with, on cereals and grasses in Sweden, **562, 563**
Bollworm, Pink (see *Pectinophora gossypiella*)
Bombax costatum, infested by *Analeptes trifasciata* in Ghana, **375**
Bombax malabaricum, *Phycita orthoclina* in dry fruit of, in India, **675**
Bombus, management of colonies of, in relation to pollination in Alberta, **639**; *Galleria mellonella* developing in cells of, in U.S.A., **588**
Bombus ruderatus, efficiency of, as pollinator of red clover in New Zealand, **179**
Bombus terrestris, as pollinator of clover in New Zealand, **179, 445**
Bombyx mori, parasitised by *Apanteles* spp. in India, **259**; experiments with viruses and, **204, 403, 405**; *Bacillus thuringiensis* infecting, **129, 481**
boninsis, *Dysmicoccus*
Books, termites attacking, **517**
boops, *Kratochviliana* (*Epilampsis*)
Bopardoil (see Methyl-ethyl Methylcarbamoylmethyl Phosphorodithioate)
Bordeaux Mixture, effects of sprays containing, on insects, **45, 197, 330, 509, 632**; and insecticides, **676**
Boric Acid, treatment of cut bamboos with, against *Dinoderus ocellaris*, **256**; treatment of timber with, against larvae of *Ambeodontus tristis*, **138**; as synergist with imidazole, **259**
Borneo, North, new Pentatomid on nipa palm in, **314**
Borrelinavirus, **204, 404, 679**
Borrelinavirus alpicolae, **688, 692**
Bostrychopsis jesuita, on *Citrus* and fig in S. Australia, **461**
Bothynoderes punctiventris (see *Cleonus*)
botrana, *Lobesia* (*Polychrosis*)
Bougainville, *Nacoleia octasema* on banana in, **671**; *Pantorhytes biplagiatus* on cacao in, **671**; parasites of *N. octasema* in, **671**
Bouteloua gracilis, as food-plant of *Camnula pellucida*, **604**
bovista, *Megaselia*
bowringi, *Podagrica* (see *P. orbiculata*)
Box (see *Buxus*)
Boxelder (see *Acer negundo*)
brachialis, *Bruchus*
Brachistes atricornis, bionomics of, parasitising *Pissodes piceae* in Germany, **429**
Brachymeria, as parasite and hyperparasite of *Susumia exigua* in Fiji, **270**
Brachymeria comitator, parasitising *Ceramidia butleri* in Costa Rica, **492**
Brachymeria euploeae, parasitising *Pieris rapae* in China, **286**
Brachymeria intermedia, parasitising *Sesamia cretica* in Yugoslavia, **394**
Brachymeria megaspila, parasitising *Eurema blanda silhetana* in India, **528**
Bracon, parasitising *Dicladispa armigera* in India, **571**
Bracon brevicornis, parasitising *Ostrinia nubilalis* in Rumania, **318**
Bracon cephi, bionomics and ecology of, parasitising *Cephus cinctus* in Canada, **658**
Bracon chinensis (parasitising Pyralids), introduced into Grenada from India, **280**; in Trinidad, **26**; failure of, to oviposit in *Diatraea saccharalis*, **26**
Bracon hebetor, parasitising *Anagasta kuehniella*, **484**; effects of γ-radiation on, **484, 485**
Bracon lautus, parasitising *Plagionotus floralis* in Yugoslavia, **297**
Bracon nanulus, parasitising *Teleia modesta* in Turkmenia, **40**
Bracon testaceorufatus, parasitising *Maliarpha separatella* in Madagascar, **442**
Bracon triangularis, parasitising *Aegeria tipuliformis* in Czechoslovakia, **333**

Bracon zeuzerae, parasitising *Zeuzera coffeae* in India, **527**; characters of, in relation to form from Java, **527**
braconius, *Colastes*
Bran, *Tribolium castaneum* infesting, **399**; in baits for fire ants, **264**; sorption of ethylene dibromide by, **149**; insecticide residues in, **93. 399**
Brassica alba (see *Sinapis*)
Brassica campestris, *Brevicoryne brassicae* overwintering on, in New Zealand, **181** (See also Turnip)
Brassica kaber (see Mustard)
Brassica oleracea botrytis (see Calabrese)
Brassica pekinensis, *Myzus persicae* on, **349, 401**; experiments with aphids and virus diseases of, **349, 535**
brassicae, *Aleyrodes* (see *A. proletella*); *Brevicoryne*; *Dasyneura*; *Hylemya* (*Chortophila*, *Erioischia*, *Phorbia*); *Liriomyza*; *Mamestra* (*Barathra*); *Pieris*; *Trioza*
Brazil, *Thyrinteina arnobia* on *Eucalyptus* in, **308**; pests of fruit trees in, **308, 446, 447, 519**; pests of groundnut in, **446**; *Migdolus morretesi* on sugar-cane in, **446**; Cercopids on pasture grasses in, **307**; potato pests in, **702**; *Aphis gossypii* on watermelon in, **285**; pests of other crops in, **702**; insects infesting stored products in, **396, 631, 638**
Bread, in diet for *Gryllus bimaculatus*, **379**
Bread Wheat (see *Triticum aestivum*)
Bremia, attacking *Myzus humuli* in Bulgaria, **324**
Brevibacterium, in *Pseudaletia unipuncta*, **402**
brevicomis, *Dendroctonus*
brevicornis, *Bracon* (*Microbracon*); *Nematocerus*
Brevicoryne brassicae, in Britain, **61, 124, 591**; in Denmark, **344**; in France, **550**; in Holland, **518**; in India, **528**; in New Zealand, **179, 180, 181**; in Queensland, **390**; in U.S.A., **13, 79**; on crucifers, **61, 79, 124, 180, 181, 344, 350, 390, 518, 591**; on melon, **13**; on *Tropaeolum*, **528**; rôle of sinigrin in food-plant selection by, **532**; transmission of viruses by, **13, 79, 124, 179, 350, 528**; bionomics of, **518**; overwintering of, **180, 181**; natural enemies of, **412, 518**; other factors affecting populations of, **180, 283, 518, 550**; assessment of mortality factors of, **438, 591**; traps for, **179, 180**; measures against, **61, 124, 181, 390**
Brevipalpus, on fruit trees in Egypt, **32**; Cheyletid predacious on eggs of, **32**
Brevipalpus cuneatus, on *Citrus* in Sicily, **200**; effects of hydrogen-cyanide fumigation on stages of, **200**
Brevipalpus lewisi, on vines in Bulgaria, **676**; acaricides against, **676**
Brevipalpus oudemansi (see *Cenopalpus pulcher*)
Brevipalpus phoenicis, on *Citrus* in Florida, **22**; on tea in Java, **53**; favoured by cover crops, **22**; acaricides against, **53**
brevipes, *Dysmicoccus* (*Pseudococcus*)
brevis, *Cryptotermes*; *Doliopygus*; *Hoplocampa*
brillians, *Harrisina*
Britain, apple pests in, **62, 63, 207, 209, 210, 304, 339, 340, 341, 559**; pear pests in, **63, 559**; *Pammene rhediella* on other fruit trees in, **559**; *Cecidophyopsis ribis* on black currant in, **169, 170, 304, 340, 341, 342**; reversion virus of black currant in, **342**; strawberry pests in, **304, 380, 535**; virus diseases of strawberry in, **535**; pests of hops in, **695**; aphids and virus diseases of beet in, **61, 62, 210, 385, 386, 535, 538**; *Aphis fabae* on broad beans in, **111, 302, 469**; *Psila rosae* on carrot in, **211**; pests of crucifers in, **61, 124, 210, 211, 535, 558, 591, 694**; virus disease of mangel in, **535**; *Tetranychus telarius* on cucumber in, **210**; *Psila nigricornis* on lettuce in, **559**; Diptera on mushrooms in, **42, 384**; pests of peas in, **62, 343, 388, 557**; aphids and virus diseases of potato in, **61, 209**; *Triphaena pronuba* damaging vegetables in, **438**; cereal pests in, **245, 437, 558, 694, 695, 700**; turf pests in, **695**; pests of clover in, **535, 633**; virus diseases of clover in, **535**; forest pests in, **52, 230, 385, 464, 559, 701**; *Rhabdophaga marginemtorquens* on ornamental willows in, **701**; *P. nigricornis* on chrysanthemum in, **559**; Cicadellids transmitting virus diseases of *Delphinium* in, **535**; insects infesting timber in, **171, 173, 643**; pests of stored products in, **89, 231, 379, 388, 537, 699, 700**; book on insect pests of agricultural crops in, **212**; *Hydroecia micacea* in, **280**; *Lasius niger* protecting *A. fabae* in, **469**; secondary food-plants of *Myzus persicae* in, **302**; *Tribolium madens* intercepted in, **468**; wireworms in, **536**; Thysanoptera overwintering in, **168, 169**; natural enemies of pests in, **230, 239, 480, 538, 558, 694**; question of use of chlorinated hydrocarbons in relation to falcons in, **642**; list of insecticides, fungicides and herbicides approved for use in, **292**; handbook on use of insecticides and fungicides in, **695**
British Columbia, pests of apple in, **140, 141, 142, 158, 450, 483, 505, 592, 595,**

596; quarantine requirements in, concerning *Cydia molesta* in apples, **361**; pests of pear in, **505, 510, 596, 666**; pear decline in, **485**; *Panonychus ulmi* on prune in, **450**; *Pennisetia marginata* on cultivated *Rubus* spp. in, **595**; *Psila rosae* on carrot in, **15**; aphids on oats in, **605**; forest pests in, **3, 109, 143, 215, 216, 217, 223, 224, 401, 405, 449, 450, 506, 516, 563, 576, 597, 601, 661, 662, 702**; *Buprestis aurulenta* infesting timber in, **223**; nuisance value of honeydew from *Myzocallis walshii* in, **450**; grasshoppers in, **602, 604**; *Hylemya brassicae* in, **602**; virus diseases of insects in, **401, 405**; beneficial insects in, **216, 507, 510, 595, 662, 666**; factors limiting use of *Chrysomela* spp. in, for control of *Hypericum perforatum*, **508**

British Insecticide and Fungicide Conference 1961, Proceedings of, **60–63, 207–210**

Broad Beans (see Beans, Broad)

Broccoli, pests of, in U.S.A., **6, 487**

Broccoli, Italian Sprouting (see Calabrese)

Brome Grass (see *Bromus inermis*)

bromicola, Stenodiplosis

Bromine, determination of, as metabolite of ethylene dibromide, **347**

o-, m- and p-Bromophenyl Methylcarbamate, study of anticholinesterase activity of, **154**

Bromus inermis, nature of injury by *Stenodiplosis bromicola* to, in U.S.S.R., **74**; as food-plant of *Melanoplus bilituratus*, **511**

Bromus riparius, nature of injury by *Stenodiplosis bromicola* to, in U.S.S.R., **74**

Brontispa limbata (*gleadowi*), bionomics of, on palms in Mauritius, **457**; sprays against, **458**

bruceata, Operophtera

Bruchidius atrolineatus, infesting cowpeas in Nigeria, **667**; *Callosobruchus maculatus* in relation to, **667**

Bruchidius unicolor, infesting seed of sainfoin in Bulgaria, **478**; measures against, **478**

Bruchophagus roddi (see *Eurytoma*)

Bruchus brachialis, on *Vicia villosa* in Texas, **97, 98**; sprays against, **98**

Bruchus ervi, bionomics of, on lentil in Sicily, **199**

Bruchus lentis (on lentil), in Algeria, **207**; bionomics of, in Sicily, **199**; effects of weather on populations of, **207**

Bruchus signaticornis, on lentil in Sicily, **199**

brucki, Coccinella septempunctata

brumata, Operophtera (*Cheimatobia*)

brunneipennis, Hypera

brunneri, Coeloides

brunneus, Coptotermes; *Lyctus*

Brussels Sprouts, *Brevicoryne brassicae* on, in England, **591**; pests of, in Germany, **471**; *B. brassicae* on, in Holland, **518**; relation of insects to rot of, **471**; effects of additives on adhesion of spray deposits to leaves of, **52**

Bryobia arborea (see *B. rubrioculus*)

Bryobia graminum, bionomics of, in Austria, **473**; on fruit trees and grasses, **473**; in houses, **473**

Bryobia macrotibialis sp. n., on grasses in Switzerland, **688**; characters of, **688**

Bryobia praetiosa Koch, specific status of form of, **688**

Bryobia praetiosa, sens. lat., effects of temperature on, **236**

Bryobia praetiosa macrotibialis (see *B. macrotibialis*)

Bryobia ribis, on currant and gooseberry in Austria, **473**

Bryobia rubrioculus (on fruit trees), in Austria, **65, 472**; in Germany, **557**; in Nova Scotia, **143, 511, 565**; bionomics of, **473, 565**; effects of low temperatures on eggs of, **600**; natural enemies of, **65, 143, 511, 565**; effects of sprays on populations of, **565**

Bucculatrix canadensisella, on birch in Ontario, **221**; competition between *Nepticula lindquisti* and, **221**

bucephala, Phalera

Buckthorn (see *Rhamnus*)

Buddleia, Tetranychus cinnabarinus on, in Egypt, **32**

Budworm, Spruce (see *Choristoneura fumiferana*)

Building Timber, Coleoptera in, **223, 432, 466, 467**; termites attacking, **206**; books on insects in, **173, 643**; association of fungi with insects in, **206**; treatment of, **233**

bukobensis, Pseudococcus (see *P. hargreavesi*)

Bulan, mixture of Prolan and (see Dilan)

Bulgaria, pests of fruit trees in, **186, 187, 188, 189, 190, 191, 192, 321, 322, 394, 415, 416, 417, 554, 555, 556, 676**; *Apatele rumicis* on raspberry in, **189**; *Tetranychus* on strawberry in, **394**; pests of vines in, **187, 676**; *Myzus humuli* on hops in, **324**; pests of beans in, **418, 556**; pests of crucifers in, **190, 321, 322**; pests of other vegetables in, **190, 321, 322, 323, 324, 394, 418, 478, 553**; pests of mushrooms in, **322**; cereal pests in, **190, 321, 323, 392, 416, 418, 478**; pests of lucerne and other leguminous forage crops in, **188, 191, 321, 322, 417, 476,**

477, 478, 553, 676; *Tetranychus* spp. on cotton in, **394**; sunflower pests in, **321, 418**; pests of tobacco in, **188, 553**; chestnut pests in, **189, 191**; forest pests in, **190, 191, 192, 465**; insects on other plants in, **187, 321, 418, 553**; beneficial insects in, **190, 192, 322, 324, 416, 554, 555, 556**; other insects in, **190, 322, 416, 418**; winter food-plants of aphids in, **324**; insect vectors of plant viruses in, **40, 188**; survey and organisations of plant protection in, **40**

buoliana, Rhyacionia (*Evetria*)

buolianae, Ephialtes (*Scambus*)

Bupalus piniarius, in Britain, **52**; in Holland, **383**; in U.S.S.R., **71**; on pines, **52, 71**; physiology of diapause in, **383**; natural enemies of, **71, 533**; method of attracting natural enemies of, **71**; insecticides against, **52, 71**; effects of DDT on immature stages of, **71**

Buphonella murina, on maize in N. Rhodesia, **126**; *Dereodus recticollis* confused with, **126**

Buprestis aurulenta, bionomics and adult habits of, in British Columbia, **223**; on Douglas fir, **223**; in building timber, **223**

Bur Clover (see *Medicago hispida*)

burmeisteri, Amphimallon; *Pterostichus*

bursarius, Pemphigus

Burundi, *Antestiopsis lineaticollis ghesquierei* on coffee in, **53**; survey of data on diseases and pests of crop plants in, **435**; distribution of forest pests in, **120**

busckella, Diatraea

buscki, Drosophila

butleri, Ceramidia

Butter-fat, residues of heptachlor epoxide in, **44**

2 - sec. - Butyl - 4,6 - dinitrophenyl 3,3 - Dimethylacrylate (see Acricid)

2-sec.-Butyl-4,6-dinitrophenyl 3-Methyl-2-butenoate (see Acricid)

Butyl p-Hydroxybenzoate, against *Aspergillus* in artificial diets for *Pectinophora gossypiella*, **150**

Butyl Paraben (see Butyl p-Hydroxybenzoate)

sec.-Butylphenyl Methylcarbamate, study on anticholinesterase activity of, **154**

buxi, Monarthropalpus

Buxus, Monarthropalpus buxi on, in Connecticut, **76**

C

C 570 (see Phosphamidon)

Cabbage, pests of, in Britain, **61, 211**; pests of, in Bulgaria, **190, 321, 322**; pests of, in Canada, **510, 602**; Lepidoptera on, in Ceylon, **618**; *Pieris rapae* on, in China, **286**; *P. brassicae* on, in Czechoslovakia, **69**; *Prodenia litura* on, in Egypt, **31**; *Hylemya brassicae* on, in Germany, **471**; *Hylemya* spp. on, in Norway, **345**; pests of, in Queensland, **390**; *H. brassicae* on, in U.S.S.R., **317**; pests of, in U.S.A., **6, 79, 414, 454**; pests of, in Vietnam, **526**; effects of *Pieris rapae* on yields of, **414**; aphids transmitting virus diseases of, **79, 350**; *Agrotis ipsilon* on, **611**; insects reared on, **245, 268, 307, 406, 538**; endrin residues in, **454**; toxicity of aldrin to, **345**

Cabbage Looper (see *Trichoplusia ni*)

Cabinets, for studying insects, **271, 411**

Cable, damaged by termite, **703**

Cacao (*Theobroma cacao*), pests of, in W. Africa, **113, 114, 115–119, 378, 440, 462, 571**; pollinated by *Forcipomyia* in Congo, **229**; leaf symptoms induced by *Myzus circumflexus* on, in Costa Rica, **520**; *Xyleborus destruens* on, in Java, **638**; pests of, in Papua and New Guinea, **236, 295, 671**; effects of cultural practices on infestation of, by *X. morstatti*, **114**; effects of shade on infestation of, **117, 118, 119**; swollen-shoot virus of, **114, 115, 118**; other diseases of, **115, 118**; systemic activity of insecticides in, **116**; question of retention of water suspensions on pods of, **52**

Cacao (Stored), insects infesting, **116, 396, 638, 696**; fungus infesting, **117**; types of sacks for, **116**; treatments of, **116, 117, 696**

Cacao Psyllid (see *Mesohomotoma tessmani*)

Cacoecia fuscocupreana (see *Ptycholoma*)

Cacoecia oporana (see *Archippus*)

Cacoecia pronubana (see *Cacoecimorpha*)

Cacoecia xylosteana (see *Archips*)

cacoeciae, Trichogramma

Cacoecimorpha pronubana, bionomics of, on carnations in France, **246, 247**; measures against, **247**

cacuminatus, Dacus (*Strumeta*)

Cadra calidella, in stored products in Britain, **537**; larval characters of, **537**

Cadra cautella (infesting stored products), in W. Africa, **638, 673**; in Brazil, **396, 638**; in Britain, **537**; in Ecuador, **638**; intercepted in Germany, **396, 638**; in India, **673**; in West Indies, **638, 696**; in Venezuela, **638**; effects of larval density on, **316**; population fluctuations of, **614**; influence of climate on infestation of flour mills by, **466**; larval

characters of, **537**; measures against, **673, 674, 696**; question of interfertility of forms of, **638**
Cadra figulilella, in stored products in Britain, **537**; larval characters of, **537**
caelatus, Ips (*Orthotomicus*)
caesar, Zenillia (*Aplomyza*)
caespitum, Tetramorium
caffeina, Leucoptera
caffer, Sphenarches
Cages, for rearing and studying insects, **201, 460, 587, 598, 680**; for mites, **139**; toxicity of plastic materials of, to barley and aphids, **161, 162**
Cajanus cajan, pests of, in Ceylon, **618**; development of *Prodenia litura* on, **530**
Calabrese, *Phytomyza rufipes* on, in England, **558**
calamistis, Sesamia
Calandra (see *Sitophilus*)
Calathea, Sibine apicalis on species of, in Costa Rica, **488**
calcator, Heteropelma
Calcite, as core for DDT granules, **178**
Calcium Arsenate, toxicity of, to aphids, **248**; toxicity of, to bees, **43**; against *Leptinotarsa decemlineata*, **248**; effects of, on beneficial insects, **248**; in sprays, **248**; as constituent of Salitol (*q.v.*), **34**
Calcium Carbonate, compatibility of heptachlor with, **299**
Calcium Chloride, inactive against *Tribolium castaneum*, **232**
Calcium Fluoride, toxicity of, to bees, **589**
Calcium Hydroxide, as constituent of Salitol (*q.v.*), **34**
Calcium Silicate, in experiments on resistance of rice varieties to *Chilo suppressalis*, **48**
calidella, Cadra
California, Lepidoptera on almond in, **657, 658**; pests of apricot and apple in, **571, 658**; pests of *Citrus* in, **23, 77, 78, 124, 125, 292, 419**; *Parlatoria oleae* on olive in, **353**; pests of pear in, **150, 358, 485, 486, 657, 658**; pear decline in, **485**; *Capitophorus* spp. on strawberry and related plants in, **351, 352**; virus diseases of strawberry in, **352**; pests of vines in, **24, 78**; pests of walnut in, **151, 306, 358, 657**; *Eulecanium kunoense* on fruit trees in, **372**; pests of melon in, **13, 22**; virus diseases of melon in, **13**; pests of beans in, **22, 649**; pests of beet in, **11, 92, 494, 650**; virus diseases of beet in, **11, 385, 494, 650**; *Myzus persicae* on *Capsicum* in, **496**; pests and mosaic virus of lettuce in, **79**; tomato pests in, **20, 22, 349, 359, 360, 649**; diseases of tomato in, **20, 349, 649**; *Macrosteles fascifrons* and virus disease of plants in, **649**; cotton pests in, **235, 495**; pests of maize in, **147, 262**; Chironomids on rice in, **78**; lucerne pests in, **22, 88, 151, 155, 156, 165, 306, 497, 582**; *Frankliniella occidentalis* on safflower in, **658**; forest pests in, **10, 79, 92, 215, 219, 306, 354, 451**; *Lygus hesperus* on *Magnolia* in, **504**; *Tyrophagus putrescentiae* infesting mushroom-spawn cultures in, **453**; insects contaminating fermenting wine in, **570**; identity of *Pseudococcus* spp. in, **486**; other insects in, **6, 307, 486**; *Tetranychus multisetis* in, **303**; virus-like pathogen of *Panonychus citri* in, **692**; natural enemies of pests in, **23, 78, 88, 125, 151, 292, 306, 352, 353, 372, 419, 497**; *Microlarinus* spp. introduced into, for control of *Tribulus terrestris*, **456, 496**; tolerance limits for insecticides in, **88, 359**
californicus, Asaphes
caliginosellus, Crambus
Caligo memnon, bionomics of, on banana and other plants in Costa Rica, **487, 488, 491**; parasites of, **488, 492**
Caliothrips sudanensis, on groundnut in Sudan, **433**
Caliroa annulipes, bionomics of, on deciduous trees in Yugoslavia, **128**; egg-parasite of, **128**
calligraphus, Ips
Calligypona excisa (see *Elymodelphax*)
Calligypona obscurella (see *Javesella*)
Calligypona pellucida (see *Javesella*)
Calligypona sordidula (see *Megadelphax*)
Calligypona striatella (see *Laodelphax*)
Callimome macropterus (see *Torymus*)
Calliphora vicina, larvae of, as food for wireworms, **536**
Callirhytis, damaging acorns in W. Virginia, **154**
Callistephus chinensis, feeding habits of Cicadellids on, **651, 653**; experiments with plant viruses and, **536, 651, 653**; labelled with radioisotopes, **653**
Callosobruchus chinensis, factors affecting toxicity of pyrethrum to **292**; carbon dioxide as anaesthetic for, **236**
Callosobruchus maculatus, introduced into Italy in stored chickpeas, **631**; infesting cowpeas in Nigeria, **667**; *Bruchidius atrolineatus* replaced by, **667**
Calonectria rigidiuscula, relation of Mirids and virus to, in swollen-shoot disease of cacao in W. Africa, **114, 115**
Calophasia lunula, question of introduction of, from Europe into Canada for control of *Linaria vulgaris*, **603**; food-plant range of, **603**

Caloptilia soyella, on soy bean in Vietnam, **527**
Calotermes (see *Kalotermes*)
Calymnia trapezina (see *Cosmia*)
cambiicola, *Dioryctria*
camelliae, *Parlatoria*
Cameraria (see *Lithocolletis*)
Cameroun Republic, *Xyleborus morstatti* on coffee in, **440**; cacao pests in, **113, 440**
camerunus, *Xyleborus* (see *X. alluaudi*)
Camnula pellucida, damaging grasslands in Canada, **602, 604**; food-plant preferences of, **604**; flight habits of, **483**; dispersal of nymphs of, **602**
Camomile (see *Matricaria chamomilla*)
Camphor, attraction of termites to analogues of, **494**
Campogaster exigua, bionomics of, parasitising *Sitona*, **516**
Campoletis perdistinctus, parasitising *Heliothis zea* in N. Carolina, **358**
Camponotus, associated with Coccids on cacao in W. Africa, **116**; infesting wooden structures, **348**; effects of endrin sprays on populations of, **116**; labelled with ^{131}I, **348**
Campoplex phthorimaeae, parasitising *Phthorimaea operculella* in Bulgaria, **554**
Campoplex rufifemur, parasitising *Rhyacionia buoliana* in Germany, **463**
Canada, *Macrosiphum caraganae* on *Caragana* spp. in, **567**; pests of cereals in, **1, 262, 591, 658**; *Endria inimica* transmitting wheat virus in, **651**; *E. inimica* in grassland in, **651**; *Pemphigus* on beet in, **91**; *Macrosiphum pisum* on peas in, **365**; *Hylemya floralis* on swedes in, **281**; *Operophtera bruceata* on fruit trees in, **568, 569**; *Pennisetia marginata* on cultivated *Rubus* spp. in, **595**; forest pests in, **3, 4, 24, 91, 143, 144, 172, 216, 223, 270, 279, 346, 405, 447, 456, 488, 509, 563, 568, 572, 592, 593, 594, 595, 598, 599, 601, 702**; pests of stored products in, **468, 699**; beneficial insects in, **24, 172, 280, 456, 519, 598, 599, 658**; question of introduction of *Calophasia lunula* into, for control of *Linaria vulgaris*, **603**; *Hydroecia micacea* in, **280**; *Hylemya* spp. in, **93**; Noctuids in, **93**; keys to larvae of species of Olethreutidae and Tortricinae in, **701**; *Popillia japonica* in, **104**; wireworms in, **281, 282**; freshwater shrimp in, **282**; text-book on economic entomology in, **178**; tolerance limits for insecticides in, **281** (See also under individual Provinces)
canadensis, *Spathius*; *Tetranychus*
canadensisella, *Bucculatrix*
cancellata, *Schistocerca*
Cancer, experimental induction of, with insecticide residues, **240**
Canfatox (see Toxaphene)
Canna coccinea, transmission of banana virus to, by aphids, **650**
Cannabis sativa, question of repellency of plants and extracts of, to insects, **391** (See also Hemp)
Cantaloup, aphid vectors of virus disease of, in Arizona, **651**; trichlorphon residues on fruit of, **585**
Cantharis rustica, predacious on *Quadraspidiotus perniciosus* in Yugoslavia, **129**
Cantheconidea (*Canthecona*) *furcellata*, predacious on *Amsacta albistriga* in India, **571**
capensana, *Tortrix*
capensis, *Cryptolestes*; *Pseudococcus* (see *P. obscurus*)
capitata, *Ceratitis*
Capitophorus chrysanthemi, on chrysanthemum in Egypt, **399**
Capitophorus elaeagni, and virus diseases of plants in New Zealand, **179**; seasonal activity of, **179**; instar-distribution of, **438**; traps for, **179**
Capitophorus fragaefolii (on strawberry), in Austria, **67**; in U.S.A., **351, 352, 586**; on related plants, **351, 352**; transmitting viruses, **352, 586**; bionomics and feeding habits of, **351, 352**; natural enemies of, **352**; sprays against, **586**
Capitophorus jacobi, on wild strawberries in California, **352**
Capitophorus thomasi, bionomics and feeding habits of, on strawberry and related plants in California, **351, 352**; transmitting strawberry viruses, **352**; natural enemies of, **352**
Capsella bursa-pastoris, *Myzus persicae* overwintering on, in New Zealand, **445**; use of, in experiments with aphids and viruses of beet, **535**
Capsicum, *Otiorhynchus orbicularis* on, in Bulgaria, **321**; aphid vectors of virus disease of, in Hungary, **57**; pests of, in U.S.A., **81, 496**; trichlorphon residues on, **585**; (fruit), *Tyrophagus putrescentiae* infesting, **184**
Capsicum annuum, development of *Phthorimaea operculella* in fruits of, **554**
Capsicum frutescens, *Myzus persicae* transmitting virus disease of, in Costa Rica, **647**
Captan (sprays containing), **86**; against apple pests, **227, 509**; *Nasonia vitripennis* unharmed by, **690**; effects of, on Tetranychids, **150, 206, 493, 565**;

effects of, on other mites, **491, 565**; effects of, on parasite of *Galleria mellonella*, **104**

Carabus hortensis, predacious on stages of *Lymantria dispar* in Yugoslavia, **56**

Caragana arborescens, *Macrosiphum caraganae* on, in Canada, **567**; *M. pisum* reared on, **567**

Caragana pygmaea, *Macrosiphum caraganae* on, in Canada, **567**

caraganae, *Macrosiphum* (*Acyrthosiphon*)

Carbamyl Thiophosphate (ester of), beneficial mites unharmed by, **2**; as constituent of MC-47, **2**

Carbaryl (see Sevin)

Carbazole, against *Epicometis hirta*, **191**; against *Omophlus* spp., **191**; bees unharmed by, **191**; in dusts and sprays, **191**

Carbon, in formulations for plant treatments with systemic insecticides, **274, 366** (See also Charcoal)

Carbon, Activated, mode of action of, against *Tribolium castaneum*, **232**

Carbon, Radioactive, used in studies of feeding habits of Cicadellids, **653**; insecticides labelled with, **109, 400, 615, 617**

Carbon Bisulphide (as fumigant), soil treatment with, against *Phylloxera vitifoliae*, **253**; against pests of stored products, **13, 300, 301, 346, 554**; sorption of, by stored cereals, **13**; effects of, on flavour of beans and germination of groundnuts, **301**; effects of débris on effectiveness of, **346**; in mixtures with other fumigants, **13, 346**

Carbon Dioxide, as anaesthetic for insects, **236**; use of, in sorting parasites, **310**; influence of, on stages of *Dacus dorsalis* treated with γ-rays, **263**; expiration of, by larvae of *Tenebroides mauritanicus* at reduced pressures, **301**; effect of, on pests of stored sorghum, **29**; as metabolite of hydrogen cyanide, **109**

Carbon Tetrachloride (as fumigant), against Coleoptera infesting stored grain, **13, 346**; sorption of, by stored cereals, **13**; effects of débris on effectiveness of, **346**; in mixtures with other fumigants, **13, 346**

Carbula pedalis, infesting houses in Nigeria, **372, 459**; insecticides against, **372**

Carcelia evolans, parasitising *Diparopsis watersi* in Chad, **205**

Carcelia gilva (see *Sturmia*)

Carcelia lucorum, bionomics of, parasitising larvae of *Malacosoma neustria* in U.S.S.R., **72, 73**

Carcelia obesa, parasitising *Bupalus piniarius* in Holland, **383**; experiments on physiology of parasitism by, **383**

carcharias, *Saperda*

Cardiaspina albitextura, bionomics of, on *Eucalyptus* in Australia, **608**; natural enemies and other mortality factors of, **609**

cardinalis, *Rodolia* (*Novius*)

Cardiochiles nigriceps, parasitising *Heliothis virescens* in N. Carolina, **358**

cardui, *Vanessa*

carduorum, *Apion* (*Ceratapion*)

Carex stenophylla enervis, as food-plant of *Camnula pellucida*, **604**

caridei, *Sarcophaga* (*Acridiophaga*)

carinatus, *Hadrobregmus*

Carinodes, parasitising *Ceramidia butleri* in Costa Rica, **492**

carmelita, *Rhinocoris*

Carnation, *Epichorista ionephela* on, in S. Africa, **112**; pests of, in France, **246, 247**; *Tetranychus telarius* on, **203**; toxicity of polybutenes to, **210**

carnea, *Chrysopa*

carnesi, *Marietta*

Carnitine, in diet for *Anthonomus grandis*, **498**

Carolina, North, *Hypera variabilis* on lucerne in, **364**; pests of maize in, **358, 360**; *Heliothis virescens* on coffee in, **358**; tobacco pests in, **15, 260, 358**; forest pests in, **270, 459**; wild foodplants of *H. zea* in, **358**; *Rhopalosiphum pseudobrassicae* in, **344**; natural enemies of pests in, **270, 358, 459**

Carolina, South, *Anthonomus grandis* on cotton in, **363, 370**; wireworms damaging tobacco in, **493**

Carolinaia setariae, on cereals and grasses in Manitoba, **660**; and virus diseases of melons in U.S.A., **13**

carolinensis, *Monochamus*

carpini, *Eotetranychus*

Carpocapsa (see *Cydia*)

Carpomyia versuviana, on *Ziziphus* in Pakistan, **279**; natural enemies of, **279, 516**

Carpophilus dimidiatus, effects of larvae of, in diet of *Necrobia rufipes*, **121**

Carpophilus hemipterus (in California), contamination of fermenting wine by, **570**; *Geotrichum candidum* isolated from, **350**

Carpophilus lugubris, on maize in Maryland, **85, 157, 461**; transmitting canker fungus of *Platanus*, **351**; insecticides against, **85, 157, 461**

Carpophilus sayi, experiments with, as vector of oak wilt in Wisconsin, **369**
Carposan 50, **37**
Carposina sasakii (*niponensis*) (in Japan), on apple, **613, 615, 616**; factors affecting diapause in, **615**; development of, **46, 107**; forecasting emergence of, **616**; use of entomogenous fungus against, **613**; other measures against, **616**
Carrot Fly (see *Psila rosae*)
Carrots, pests of, in Australia, **310, 311**; *Psila rosae* on, in Britain, **211**; *Trioza brassicae* on, in Bulgaria, **190**; *P. rosae* on, in Canada, **15**; *P. rosae* on, in Germany, **556**; pests of, in U.S.A., **163, 588**; adults of *Blastothrix confusa* feeding on flowers of, **135**; seed treatment of, **556**; effects of seed treatment on germination of, **211**; insecticide residues in, **556, 585**; in rearing media for *Dacus* spp., **310**
Carthamus tinctorius, *Frankliniella occidentalis* on, in California, **658**
carueli, *Carulaspis* (see *C. minima*)
Carulaspis carueli (see *C. minima*)
Carulaspis juniperi, bionomics and natural enemies of, on *Juniperus* in Italy, **328**; measures against, **328**; misidentified as *C. visci*, **328**
Carulaspis minima, bionomics and natural enemies of, on Cupressaceae in Italy, **328**; measures against, **328**; misidentified as *C. visci*, **328**
Carulaspis visci, on mistletoe in Italy, **328**; species misidentified as, **328**
Carvalhoia arecae, bionomics of, on palms in India, **621**; sprays against, **621**
Caryedon gonagra, in stored groundnuts in Portuguese Guinea, **300**; effects of adult density on oviposition by, **300**
caryophyllae, *Chrysotypus*
Casca chinensis, parasite of *Chrysomphalus bifasciculatus* in Japan, **225**
Casca occidentalis, parasitic on *Quadraspidiotus perniciosus* in Yugoslavia, **129**
Casein, *Trogoderma inclusum* attracted to, **268**; in diets for insects, **8, 222, 223, 305, 439, 497**
Cashew (see *Anacardium occidentale*)
Casinaria, parasitising *Sibine apicalis* in Costa Rica, **488, 492**
Cassida deflorata, on globe artichoke in France, **338**; parasites of, **339**
castanea, *Diparopsis*
castaneum, *Tribolium*
castaneus, *Cyrtepistomus*; *Scaptocoris*
castnia, *Tragocephala*
Castolus plagiaticollis, predacious on larvae of *Platynota rostrana* in Honduras, **45**
Castor (see *Ricinus communis*)
catalaunalis, *Antigastra*
Catalpa speciosa, experiments with *Protoparce sexta* on, **303**
Cathode Rays, effects of, on *Sitophilus oryzae*, **382**
Catocala nymphaea (see *Ephesia*)
Catocala nymphagoga, on *Quercus ilex* in Spain, **679**; virus disease of, **679**
Cattle, toxicity of *Senecio longilobus* to, **516**; insecticide contamination of forage for, **164**; metabolism of insecticides in, **44, 455**; insecticide residues in tissues and milk of, **44, 88, 265, 454, 489, 521**
caucasicum, *Amphimallon*
Cauliflower, aphids on, in Britain, **124**; *Trichoplusia ni* on, in Texas, **6**; experiments with aphids and virus diseases of, **79, 124**
cautella, *Cadra* (*Ephestia*)
Cavariella aegopodii, and virus diseases of plants in New Zealand, **179**; traps for, **179**; seasonal activity of, **179**
cavus, *Dibrachys*
CC 9882 (see Diphenyl Sulphide)
Cecidophyopsis ribis (on black currant in Britain), bionomics of, **169, 170, 341**; foliage abnormality caused by, **340**; and reversion virus, **342**; estimation of stages of, **341**; measures against, **170, 304, 342**; labelled with ^{32}P, **342**
Cedar of Lebanon (see *Cedrus libani*)
Cedar, Western Red (see *Thuja plicata*)
Cedrus libani, insects infesting cones of, in Turkey, **430**
Ceiba pentandra, infested by *Analeptes trifasciata* in Ghana, **375**; swollen-shoot virus of cacao transmitted to, by *Planococcoides njalensis*, **118**
Celama sorghiella, tests and uses of insecticides against, on sorghum in Oklahoma, **581**
Celeriac, *Macrosteles fascifrons* on, in Colorado, **163**
Celerio lineata livornica, bionomics of, on vines and weeds in Yugoslavia, **194**; parasites and fungus disease of, **194**; dusts against, **194**
Celery, pests of, in U.S.A., **21, 163, 652**; yellows virus of, **652**
Cellulose Acetate, toxicity of, to barley and aphids, **161**
Cellulose Nitrate, suitability of, for plant and insect cages, **162**
celtidismamma, *Pachypsylla*
celtidisvesiculum, *Pachypsylla*
Celtis, *Pachypsylla* spp. on, in Kansas, **14**
Celtis mildbraedii, *Trachyostus aterrimus* infesting timber of, in Ghana, **376**
celtis, *Planococcus*

cembrae, *Ips*
Cenopalpus pulcher, in Austria, **65, 473**; on fruit trees, **473**
Central African Republic, coffee pests in, **440**
centrella, *Eodiatraea*
Cephalcia abietis, on spruce in Austria, **684**; virus disease of, **684**
cephalonica, *Corcyra*
Cephalonomia stephanoderis sp. n., parasitising *Stephanoderes hampei* in Ivory Coast, **373, 434**; bionomics of, **434**
Cephalonomia utahensis, bionomics of, parasitising Coleoptera in California, **306**
Cephalosporium, in relation to *Doliopygus dubius*, **373**
cephi, *Bracon*
Cephus cinctus (on cereals), in Canada, **213, 658**; in Montana, **157**; factors affecting susceptibility of wheat varieties to, **213, 214**; effects of diets on larvae of, **222**; parasite of, **658**; insecticides against, **157**; method of rearing, **222**
Cephus pygmaeus, on wheat in Sweden, **561**
Ceracia nomadacridis, bionomics of, parasitising *Nomadacris septemfasciata* in Tanganyika, **105**; effects of, on fecundity of *N. septemfasciata*, **105**
Ceramidia butleri, on banana in Costa Rica, **492**; natural enemies of, **492**
Ceramidia viridis, on banana in Ecuador, **482**; new parasite of, **482**
ceramidiae, *Stenomesius*
Ceraphron fijiensis, as hyperparasite of *Susumia exigua* in Fiji, **270**
cerasi, *Myzus*; *Rhagoletis*
cerasifex, *Eulecanium* (*Lecanium*)
cerasivoranus, *Archips*
Ceratapion carduorum (see *Apion*)
Ceratitis capitata, in S. Africa, **111, 435**; in Argentina, **646**; in W. Australia, **311**; in France, **299**; in Italy, **195, 196, 208, 421**; occurrence of, in U.S.A., **126, 272, 442, 492**; in Yugoslavia, **326**; world distribution of, **421**; on apricot, **421**; on *Citrus*, **646**; on guava, **442**; on papaya, **492**; on peach, **208, 299, 421, 435, 646**; on pear, **208**; oviposition behaviour of, **108**; *Serratia marcescens* in eggs of, **635**; natural enemies of, **311, 442, 516**; biological control of, **195, 196**; effects of γ-radiation on development of, **263**; baits for, **111, 126, 326, 646**; chemosterilants for, **94**; insecticides against, **196, 208, 299, 421, 435, 489, 492**; toxicity of acaricides to, **424**
Ceratitis rosa, in S. Africa, **111, 435**; map of distribution of, **212**; on peach, **435**; sprays and bait-sprays against, **111, 435**
Ceratocystis fagacearum (causing oak wilt), insect vectors of, in Wisconsin, **369**
Ceratocystis fimbriata, transmission of, by Coleoptera to *Platanus* in New Jersey, **351**
Ceratocystis ulmi (causing Dutch elm disease), *Magdalis* spp. insignificant as vectors of, in Wisconsin, **368**
Ceratomegilla fuscilabris, predacious on *Psylla pyricola* in British Columbia, **510**
Ceratomegilla maculata, associated with *Mindarus abietinus* in N. Carolina, **270**; diet for, **606**
ceratoniae, *Ectomyelois* (*Myelois*)
cercopiphagus, *Tumidiscapus*
cerealella, *Sitotroga*
cerealium, *Limothrips*
Cereals, pests of, in N. Africa, **237, 313**; pests of, in Bulgaria, **190, 416**; pests of, in Canada, **262, 660**; pests of, in Finland, **63, 64, 107, 108**; *Oscinella frit* on, in France, **425**; *O. frit* on, in Germany, **433**; *Nematocerus* sp. on, in Kenya, **27**; pests of, in Middle East, **127, 237, 313, 314**; *Crepidodera ferruginea* on, in Scotland, **700**; pests of, in Sweden, **560, 563**; aphid on, in Switzerland, **60**; pests of, in U.S.A., **152, 165, 297, 505**; virus diseases of, **60, 63, 64, 563**; methods for investigation of fauna of, **108**; review of losses caused by pests of, **243**; symposium on varietal resistance of, to insects, **244, 245**; seed treatment of, **262**; sorption of methyl bromide by, **85** (See Maize, Wheat, etc.)
Cereals (Stored), Coleoptera in, **13, 218, 240, 337, 379, 381, 396, 462, 466**; separation of sexes of Coleoptera in, **381**; Lepidoptera in, **379, 466**; mites in, **184, 218, 466, 562, 699**; book on pests of, **173**; assessment of damage to, by insects, **378**; factors affecting infestation of, **273, 466, 561**; question of γ irradiation of, against pests, **525**; experiments with electrical fields against pests of, **239, 240**; treatment of, with antimetabolite, **259**; fumigation of, **273, 346**; other insecticide treatments of, **273**; residues of fumigants in, **347, 455**
Cereclor, sprays of DDT and BHC not improved by addition of, **229**
cereris, *Cetema*
Ceroplastes destructor, on orange in New South Wales, **182**; diverse effects of sprays on, **182**
Ceroplastes sinensis (in Italy), on *Citrus*, **197, 198**; on pear, **234**; bionomics of, **234**; natural enemies of, **198**

Cerosipha forbesi, on strawberry in Austria, **67**
Cerosipha gossypii (see *Aphis*)
cervina, Eumeta
cervinus, Polydrusus
Cetema cereris, on cereals and grasses in Sweden, **560**
Ceutorhynchus assimilis (on crucifers), in Denmark, **427, 636**; in Germany, **132, 335, 687**; relation of, to *Dasyneura brassicae*, **636**; trap-catches of, **427**; reduction in populations of, by Thiodan aerosol applied against *D. brassicae*, **132**; insecticides against, **335, 687**
Ceutorhynchus napi, bionomics of, on rape in France, **682**; factors affecting diapause in, **682**
Ceutorhynchus quadridens, trap-catches of, in Denmark, **427**
Ceylon, Lepidoptera on cabbage in, **618**; pests of *Cajanus cajan* in, **618**; cotton pests in, **618**; pests and diseases of Guatemala grass in, **126**; pests of tea in, **619, 672, 673**; *Xyleborus fornicatus* on shade trees for tea in, **619**; *Pyrilla* spp. in, **123**; *X. compactus* in, **517**; fungus infesting *Plusia eriosoma* in, **618**; beneficial insects in, **618, 619, 673**
Chad Republic, *Diparopsis watersi* on cotton in, **205**; *Dactylispa nigritula* on millet in, **107**; natural enemies of *Diparopsis watersi* in, **205**
Chaetocnema, species of, in U.S.S.R., **516**
Chaetocnema concinna, trap-catches of, in Denmark, **427**
Chaetocnema pulicaria, sprays against, on cereals in Oklahoma, **166**
Chaetodacus cucurbitae (see *Dacus*)
chalcidiformis, Sesia
chalcites, Plusia (*Phytometra*)
chalcographus, Ips (*Pityogenes*)
chalybea, Haltica (*Altica*)
chalybeus, Orcus
Chamaecyparis pisifera, Carulaspis minima on, in Italy, **328**
Chamaesphecia aerifrons, bionomics of, on lavender and *Origanum vulgare* in France, **515**; Ichneumonid reared from, **515**; measures against, **515**
Chantia, gen. n., **372**
Charcoal, use of, in rearing *Tyrophagus longior*, **411** (See also Carbon)
Charcoal, Activated, mode of action of, against *Tribolium castaneum*, **232**
Charips, hyperparasite of *Chromaphis juglandicola* in California, **151**
Charips ancylocerus, hyperparasite of *Brevicoryne brassicae* in Holland, **518**
Charops obtusus, parasitising *Eurema blanda silhetana* in India, **529**
Cheese, *Tyrophagus putrescentiae* infesting, **184**; in diet for *T. longior*, **411**
Cheimatobia brumata (see *Operophtera*)
Cheletogenes ornatus, predacious on eggs of *Brevipalpus* sp. in Egypt, **32**
Chelonella (see *Chelonus*)
Chelonus, Susumia exigua parasitised by species of, in Fiji, **270**
Chemosterilants, for Coleoptera, **94, 501**; for Trypetids, **94**; for Tetranychids, **269, 270, 578**; question of hazards in use of, **270**
Chenopodium album, Pemphigus populivenae on, in California, **92**; *Cleonus punctiventris* on, in Germany, **430**
cheopis, Xenopsylla
Chermes, species of, on conifers in India, **459, 598**; on spruce in U.S.A., **219**; Coccinellids predacious on, **459, 598**
Chermes cooleyi, on spruce in Canada, **593, 594**; bionomics of monomorphic strain of, **594**
Chermes merkeri (on *Abies*), in Austria, **394**; in Germany, **102**; development of, **102**
Chermes nordmannianae (*nuesslini*) (on *Abies*), in Austria, **394**; in Germany, **102**; development of, **102**; factors affecting populations of, **394**
Chermes piceae (on *Abies*), in Canada, **4, 592, 598**; in U.S.A., **219, 459**; as precursor of fungal infection, **4**; predators of, **219, 459, 593**
Chermes prelli, development of, on *Abies nordmanniana* in Germany, **102**
Chermes similis, bionomics of, on spruce in Canada, **216**
Chermes tardus, bionomics of, on spruce in France, **205, 546**; effects of weather on populations of, **547**; measures against, **206, 547**
Chermes viridis, on larch in Norway, **637**; varietal susceptibility of larch to, **637**
Cherry, *Pammene rhediella* on, in Britain, **559**; *Rhagoletis cerasi* on, in Bulgaria, **187**; *Argyresthia ephippella* on, in France, **296**; *R. cerasi* on, in Germany, **132, 300, 682**; pests of, in Italy, **36, 37, 38, 196, 208, 289, 543**; *Quadraspidiotus ostreaeformis* on, in New Zealand, **181**; *R. cerasi* on, in Poland, **185**; pests of, in U.S.A., **21, 158**; *R. cerasi* on, in Yugoslavia, **193**; systemic activity of dimethoate and metabolite in, **45, 208**; tainted by BHC, **187**; insecticide residues on, **37, 133, 290, 682**; persistence of insecticide deposits on leaves of, **484, 512**
Cherry, West Indian (see *Malpighia punicifolia*)
Cherry Fruit-fly (see *Rhagoletis cerasi*)

Chestnut, pests of, in Bulgaria, **189, 192**; pests of, in France, **548**; development of *Eulecanium rufulum* on, in Yugoslavia, **54**; treatment of nuts of, against *Curculio elephas*, **192**
Cheyletus eruditus, in stored medicinal herbs in Poland, **183**
Cheyletus trouessarti, recorded from stored wheat in Saskatchewan, **221**
Chiasmia clathrata, on lucerne in Bulgaria, **188, 477, 676**; bionomics of, **477**; insecticides against, **477, 676**
Chickpeas (Stored), *Callosobruchus maculatus* infesting, **631**
Chicory, Agromyzids infesting: in Belgium, **52, 234**; in France, **458**
Chile, pests of forage crops in, **171**; *Acarus siro* in stored products in, **699**
Chilo, species of, on cereals in Sudan, **433**; larva ascribed to, on *Scirpus tuberosus* in Pakistan, **278**; parasites of, **278, 279**
Chilo infuscatellus (on sugar-cane), in Pakistan, **277**; in Vietnam, **526**; parasites of, **277, 278**
Chilo suppressalis (on rice), in Japan, **48, 226, 413, 616, 617**; in Vietnam, **526**; question of silicon as factor in resistance of varieties of rice to, **48**; migration and fluctutations in populations of, **413, 617**; nutritional requirements of, **315, 615**; susceptibility of larvae of, to *Isaria farinosa*, **226**; parasite of, **413**; light-trap catches of, **413, 526, 617**; insecticide treatments against, **616**
Chilo tumidicostalis, measures against, on sugar-cane in India, **49**
Chilo zonellus, in India, **258**; in Pakistan, **278**; on maize and sorghum, **258, 278**; on sugar-cane, **278**; varietal susceptibility of cereals to, **258**; diapause in, **258**; effect of food-plant on degree of parasitisation of, **278**
Chilocorus, destroying nymphs of *Ceroplastes sinensis* in Sicily, **198**
Chilocorus bipustulatus (predacious on Coccids), in Iraq, **123**; in Italy, **198, 328**; in Yugoslavia, **129**
Chilocorus quadripustulatus, predacious on *Quadraspidiotus perniciosus* in Yugoslavia, **129**
Chilotraea (see *Chilo*)
China, cotton pests in, **287, 391**; *Laodelphax striatella* on rice in, **391**; *Phylloxera vitifoliae* on vines in, **286**; *Pieris rapae* on cabbage in, **286**; pests of vegetables in, **286, 287**; *Heliothis armigera* on sunflower in, **287**; beneficial insects in, **78, 125, 286**; tests of resistance to termites in timbers from, **100**
chinensis, *Bracon* (*Microbracon*); *Callosobruchus*; *Casca*
chionaspidis, *Arrhenophagus*; *Azotus*
Chionaspis tegalensis, on sugar-cane in Réunion, **514**
Chiracanthium isiacum, attacking immature stages of *Prodenia litura* in Egypt, **30**; effects of sprays on, **30**
Chirothrips manicatus, overwintering of, in Britain, **169**
Chlorbenside, toxicity of, to insects, **424, 690**; against Tetranychids, **42, 199, 207, 371, 424, 543**; toxicity of, to stages of *Tetranychus telarius*, **9, 139**; susceptibility or resistance to, in strains of Tetranychids, **50, 208**; comparative toxicity of, to arthropods, **155, 424**; effects of, on beneficial arthropods, **42, 690**; factors affecting toxicity of, **139**; in sprays, **199, 371, 543, 690**; as deposit, **690**; and TEPP, **199, 543**
Chlordane, against ants, **201, 521**; against Curculionids, **8, 10, 174, 195**; against other Coleoptera, **18, 369, 380, 398, 458, 486**; resistance to, in strains of *Conoderus*, **260**; against Hemiptera, **34, 447, 530, 622, 677**; against Noctuids, **34, 414, 677**; against other Lepidoptera, **34, 86, 308, 498, 544**; against Trypetids, **111, 611**; resistance to, in strain of *Dacus curcurbitae*, **611**; tests and uses of, against other Diptera, **8, 211, 345**; against *Forficula auricularia*, **261**; against grasshoppers and locusts, **195, 257, 528, 621**; toxicity of, to *Periplaneta americana*, **8**; against termites, **400, 702**; comparative toxicity of, to arthropods, **155**; in dusts, **34, 174, 257, 345, 447, 486**; in granules, **18, 261, 486, 521**; in sprays, **18, 201, 211, 261, 447, 458, 486, 498, 621, 677**; as deposit, **261**; in bait-sprays, **111**; seed treatment with, **345**; treatment of planting material with, **260**; soil treatment with, **18, 257, 260, 345, 369, 398, 400, 486, 544, 702**; tobacco leaves tainted by, **137**; residues of, in milk and tissues of cattle, **521**; determination of residues of, **369, 400, 702**; heptachlor epoxide in technical formulations of, **521**; synergism of DDT with, **370**
Chlorfenson, against Tetranychids, **42, 196, 290, 395, 424, 449**; toxicity of, to stages of *Tetranychus telarius*, **9, 139**; susceptibility or resistance to, in strains of mites, **50, 208, 491**; effects of, on beneficial arthropods, **3, 42, 491**; comparative toxicity of, to arthropods, **155, 424**; factors affecting toxicity of, **139**; in sprays, **2, 290, 395, 449**; and malathion, **2, 449**; and trimethoate, **290**

Chloridea (see *Heliothis*)
Chlorine, Radioactive, dieldrin labelled with, **524**
Chloriona cubanus (see *Sogatodes*)
Chloriona furcifera, revision and identification of members of complex of, **379, 380** (See *Sogatella*)
Chloriona orizicola (see *Sogatodes*)
Chlorita biguttula (see *Empoasca*)
Chlorobenzilate, against *Cydia pomonella*, **187**; against Tetranychids, **9, 42, 371, 424**; against *Phyllocoptruta oleivora*, **611**; effects of, on beneficial arthropods, **2, 42, 491**; resistance to, in strains of mites, **491**; comparative toxicity of, to arthropods, **155, 424**; development of *Beauveria bassiana* unaffected by, **393**; in sprays, **2, 187, 371, 611**; and DDT, **187**
p-Chlorobenzyl 2-Chloroethyl Sulphide, toxicity of, to stages of *Tetranychus telarius*, **9**
Chlorochroa sayi, on bitterbrush in Idaho, **580**
Chlorocide (see Chlorbenside)
Chloroclystis rectangulata, bionomics of, on pear and quince in Bulgaria, **189**
P-Chloro-2,4-dioxa-5-methyl-P-thiono-3-phosphabicyclo[4.4.0]decane, against Coleoptera, **260, 383**; vapour toxicity of, **383**; applied in transplanting water, **260**
2-Chloroethyl 2-(2-(p-tert.-Butylphenoxy)-isopropoxy)isopropyl Sulphite, in sprays against *Aculus schlechtendali*, **82**
2-Chloroethyl 2-(p-tert.-Butylphenoxy)-1-methylethyl Sulphite, against Tetranychids, **9, 42, 199, 287, 366, 543**; against other mites, **53**; susceptibility or resistance to, in strains of mites, **50, 80, 81, 491**; comparative toxicity of, to arthropods, **155**; effects of, on beneficial arthropods, **42, 491**; in dusts, **53**; in sprays, **53, 199, 287, 543**; residues of, not tolerated in New Zealand, **139**; as a carcinogen, **139, 241**; and fenson, **199, 543**
2-Chloroethyl 2,2-Dichlorovinyl Ethyl Phosphate, toxicity of, to Coleoptera, **382, 383**; vapour toxicity of, **383**
Chloroform, use of, in experiments with attractant for *Anthonomus grandis*, **269**
4'-Chloro-2-nitro-4-(trifluoroethyl)-diphenylamine, toxicity of, to arthropods, **265**; systemic activity of, **265**; in sprays, **265**
o-, m- and p-Chlorophenyl Methylcarbamate, study on anticholinesterase activity of, **154**
p-Chlorophenyl Phenyl Sulphone, comparative toxicity of, to arthropods, **155**
Chlorophora excelsa, factors affecting attraction of bark-beetles to, **694**
Chlorops oryzae, bionomics of races of, on rice in Japan, **47, 48**
Chlorops pumilionis (on cereals), in Bulgaria, **392, 416**; in Sweden, **560**; effect of sowing date on infestation by, **392**; BHC soil treatment against, **416**
Chlorparacide (see Chlorbenside)
Chlorthion, against *Diaphorina citri*, **622**; effects of pre-treatment with piperonyl butoxide on susceptibility of *Drosophila melanogaster* to, **683**; vapour toxicity of, **683**
Chokecherry (see *Prunus virginiana*)
Cholesterol, in diets for insects, **485, 498**
Choline, in diet for *Anthonomus grandis*, **498**
Choline Chloride, in diets for Pyralids, **8, 615**
Cholinesterases, action of carbamate insecticides on, **154, 155**; action of phosphorus compounds on, **80, 298, 355, 460, 494, 542**
Choreutis bjerkandrella, on globe artichoke in France, **338**; parasites of, **338**
Choristoneura fumiferana (on conifers), in Canada, **4, 283, 284, 565, 592, 599, 659, 663**; in U.S.A., **12, 492, 581**; in relation to secondary damage, **4, 12**; food-plant preferences of, **492**; wind dispersal of larvae of, **284**; net for collection of immature stages of, **99**; tests of *Bacillus* spp. against, **659**; virus diseases of, **565, 659**; natural enemies of, **577, 599, 659**; influence of haemolymph of, on parasite fecundity, **568**; insecticides against, **284, 581, 592**
Choristoneura pinus, on pines in U.S.A., **97, 490**; parasites of, **490, 577**; method of sampling, **97**
Chorizagrotis auxiliaris, factors affecting life-span and fecundity of, in Nebraska, **365**
Chortoicetes terminifera, rainfall and outbreaks of, in Australia, **312**
Chortophila (see *Hylemya*)
Chou Moellier (see Kale)
Chromaphis juglandicola, natural enemies of, on walnut in California, **151, 306**
Chromatography, purification of sex attractant of *Diprion similis* by, **261**; identification of 3,4-methylenedioxyphenyl synergists by, **460**; of insecticide residues, **149, 460** (See also Gas and Paper Chromatography)
Chrysalidocarpus lutescens, *Carvalhoia arecae* on, in India, **621**
chrysanthemi, *Capitophorus* (*Pleotrichophorus*)

Chrysanthemum, aphids on, in Egypt, **399**; *Psila nigricornis* on, in England, **559**; other pests of, **10, 11**; systemic activity of acaricides in, **11**
chrysocephalus, Psylliodes
Chrysocharis pubens, parasitising *Lithocolletis blancardella* in Italy, **330**
Chrysocoris stollii, bionomics of, on litchi and other plants in India, **529**
Chrysolina (see *Chrysomela*)
Chrysomela, factors limiting use of species of, against *Hypericum perforatum* in British Columbia, **508**
chrysomphali, Aphytis (*Aphelinus*)
Chrysomphalus aonidum (see *C. ficus*)
Chrysomphalus bifasciculatus, on ornamental plants in Japan, **225**; parasites and hyperparasite of, **225, 226**; method of rearing, **225**
Chrysomphalus dictyospermi, on avocado, **124**; on *Citrus*, **124, 198, 208**; in Italy, **124, 198, 208**; world distribution of, **124**; natural enemies of, **124, 125, 198**; systemic insecticides against, **208**
Chrysomphalus ficus, on *Citrus* in U.S.A., **22, 372**; effects of cover crops on populations of, **22**; parasites of, **372**
Chrysopa, predacious on *Margaronia unionalis* in Israel, **479**
Chrysopa carnea (destroying Hemiptera), in British Columbia, **510**; in Iraq, **123**
Chrysopa oculata, predacious on *Psylla pyricola* in British Columbia, **510, 666**; effects of sprays on populations of, **666**
Chrysopa perla, predacious on Tetranychoid mites in Austria, **65**; attacking *Myzus humuli* in Bulgaria, **324**
Chrysopa vulgaris, predacious on Tetranychoid mites in Austria, **65**; beneficial mites destroyed by, in Germany, **624, 690**; predacious on *Cydia pomonella* in Rumania, **319**
chrysorrhoa, Scirpophaga
chrysorrhoea, Euproctis
Chrysotypus caryophyllae, bionomics of, on clove trees in Madagascar, **441**; systemic insecticides against, **441**
Ciba 570 (see Phosphamidon)
Cicer arietinum, *Heliothis armigera* on, in India, **257**
Cichorium endivia, aphids on, in Austria, **67**
Cienfuegosia affinis, immature stages of *Alabama argillacea* on, in Venezuela, **297**
Cigarettes, experiments on recovery of insecticides from, **167**
ciliata, Forcipomyia
cilicrura, Hylemya (*Chortophila*)
Cinara laricis, on larch in Mongolia and U.S.S.R., **255**
Cinara manitobensis sp. n., on *Juniperus horizontalis* in Manitoba, **702**
Cinara petersoni sp. n., on *Juniperus horizontalis* in Manitoba, **702**
Cinara pini (*pinea*), on *Pinus cembra* in Mongolia and U.S.S.R., **255**
cincinnatiella, Lithocolletis (*Cameraria*)
cincticeps, Nephotettix
cinctipes, Lasiosina
cinctus, Anthonomus (see *A. piri*); *Cephus*
cinerascens, Cnephalia (*Isomera*)
cingulata, Rhagoletis
cingulatus, Dysdercus
cinnabarinus, Tetranychus
cinnamomi, Aulacaspis (see *A. tubercularis*)
Cinnamomum zeylanicum, Aulacaspis tubercularis on, in Java, **230**
Cinnamyl Alcohol, as attractant for termites in fungus-infested timber, **494**
Circulifer tenellus, on beet in U.S.A., **274, 650**; factors affecting transmission of beet virus by, **650**; insecticides against, **274**
circumflexus, Myzus (*Neomyzus*)
circumscriptus, Apanteles
Cirphis loreyi (see *Leucania*)
Cirphis unipuncta (see *Pseudaletia*)
Cirrospilus lyncus, parasitising *Lithocolletis blancardella* in Italy, **330**
Cirrospilus pictus, development of, parasitising *Coleophora laricella* in Sweden, **41, 628**
Cirrospilus pulcherrimus, parasitic on *Exoteleia dodecella* in Czechoslovakia, **68**
citrana, Aneflomorpha; *Argyrotaenia*
citrella, Phyllocnistis
citri, Diaphorina; *Panonychus*; *Planococcus* (*Pseudococcus*); *Unaspis*
citricidus, Toxoptera
citricola, Sinomegoura
citrina, Aonidiella
citrinus, Aphytis; *Aspidiotiphagus*; *Geococcus*
Citrus, pests of, in S. Africa, **112, 480**; pests of, in Arabia, **33**; *Ceratitis capitata* on, in Argentina, **646**; pests of, in Australia, **106, 181, 182, 461**; pests of, in Brazil, **308, 447**; pests of, in Bulgaria, **190, 676**; *Trioza erytreae* on, in Eritrea, **230**; pests of, in Formosa, **611, 612**; pests of, in Greece, **124, 675**; aphids on, in India, **176**; *Planococcus citri* on, in Israel, **634**; pests of, in Italy, **124, 195, 196, 197, 198, 199, 200, 201, 208, 419, 544**; pests of, in Kenya, **230**; *Toxoptera citricidus* on, in Malaya, **314**; pests of, in Mexico, **124, 125, 272, 500, 582**; *Diaphorina citri* on, in W.

Pakistan, **622**; pests of, in Persia, **124, 331**; pests of, in S. Rhodesia, **125, 667**; pests of, in U.S.S.R., **124, 297**; pests of, in U.S.A., **22, 23, 77, 78, 99, 124, 125, 176, 272, 292, 371, 372, 419, 569, 570**; *Aleurocanthus woglumi* on, in West Indies, **125**; *Chrysomphalus dictyospermi* on, in other countries, **124**; systematic list of pests of, in S.-E. Asia and Pacific area, **44**; survey of data and distribution of *A. woglumi* on, **125**; aphids and tristeza virus of, **176, 314, 612**; key to species of aphids on, **640**; influence of cover crops on populations of pests of, **22**; systemic activity of dimethoate and analogue in, **208**; (fruit), fumigation of, **500, 582**; effects of oils on composition of juice of, **181**

Citrus medica, *Phyllocnistis citrella* on, in Arabia, **33**

Citrus Mite, Texas (see *Eutetranychus banksi*)

Citrus Rust Mite (see *Phyllocoptruta oleivora*)

claripalpis, *Paratheresia*

claripennis, *Microterys*

clathrata, *Chiasmia* (*Phasiane*)

clavata, *Coruna*

clavigera, *Pseudaonidia*

Clays, as carriers for insecticides, **264, 697**; leaching of dieldrin from granules of, **502**

Clays, Activated, mode of action of, against *Tribolium castaneum*, **232**

Claytonia perfoliata, use of, in experiments with aphids and viruses of beet, **535**

cleone, *Sectiliclava*

Cleonus luigionii, on beet in Italy, **195, 701**; insecticides against, **195**

Cleonus mendicus, on beet in Italy, **195, 331**; parasite of, **331**; insecticides against, **195**

Cleonus punctiventris (on beet), in Bulgaria, **478**; in Germany, **429**; in Rumania, **320**; distribution of, in central Europe, **429**; other food-plants of, **430**; bionomics and feeding activity of, **430**; measures against, **320, 430, 478**

Cloeon dipterum, used in tests of insecticides, **460**

Closterocerus trifasciatus, parasitising Agromyzids in Italy, **629, 630**

Clove (see *Eugenia caryophyllata*)

Clover, Cicadellids and virus diseases of, in Britain, **535, 536**; pests of, in Bulgaria, **322**; Cicadellids and virus diseases of, in Czechoslovakia, **69**; pests of, in U.S.A., **148, 274**; oviposition by *Agrotis ipsilon* on, **593** (See also *Trifolium*)

Clover, Bur (see *Medicago hispida*)

Clover, Ladino (see *Trifolium repens*)

Clover, Red (see *Trifolium pratense*)

Clover, Strawberry (see *Trifolium fragiferum*)

Clover, Sweet (see *Melilotus* spp.)

Clover, White (see *Trifolium repens*)

Clover Weevil (see *Hypera nigrirostris*)

clypealis, *Prospaltella*

clypeatus, *Reticulitermes*

Clysiana (*Clysia*) *ambiguella* (on vines), in France, **298**; in Italy, **678**; insecticides against, **298, 678**

Clytiomyia, species of, parasitising *Eurygaster* spp. in U.S.S.R., **182**

Cnephalia cinerascens, parasitising *Hadena sordida* in U.S.S.R., **523**; labelled with radioisotopes, **523**

Cnephasia virgaureana, on strawberry in Germany, **242**

c-nigrum, *Amathes* (*Agrotis*, *Rhyacia*)

coagulata, *Homalodisca*

coarctata, *Hylemya* (*Leptohylemyia*)

Cobalt, Radioactive, effects on insects of γ-radiation from, **263, 469, 483, 491, 522, 525, 592, 692**; influence of γ-radiation from, on virulence of *Beauveria bassiana*, **522**; used in study of *Rhyacionia buoliana*, **146**

Cobalt Sulphate, influence of, on diapause in *Leptinotarsa decemlineata*, **644**

coccidicola, *Aphidencyrtus* (see *A. pulvinatus*)

Coccinella axyridis, predacious on aphids in Japan, **412**

Coccinella bipunctata (see *Adalia*)

Coccinella decempunctata (see *Adalia*)

Coccinella septempunctata, in Bulgaria, **324**; question of introduction of, into Canada, **598**; in Czechoslovakia, **623**; in Germany, **684**; in Hungary, **57, 58**; in India, **598**; in Iraq, **123**; in Switzerland, **248**; in Yugoslavia, **129**; predacious on aphids, **57, 58, 248, 324, 518, 598**; predacious on other Hemiptera, **123, 129**; predacious on *Athalia rosae*, **684**; effects of sprays on populations of, **248, 623**; factors affecting toxicity of pyrethrum to, **292**; varieties of, **598**

Coccinella septempunctata brucki, predacious on aphids in Japan, **412**

Coccinella septempunctata confusa, **598**

Coccinella septempunctata divaricata, **598**

Coccinella undecimpunctata (predacious on insects), in Egypt, **30**; in Iraq, **123**; effects of sprays on populations of, **30**

Coccophagoides similis, bionomics of, as parasite and hyperparasite of Coccids in Italy, **630**
Coccophagus basalis, moisture requirements of, **91**
Coccophagus bivittatus, bionomics and larval feeding habits of, parasitising *Coccus hesperidum* in Italy, **545**
Coccophagus lycimnia (parasitising Coccids), in California, **372**; in Ontario, **665**; bionomics of, in U.S.S.R., **135, 136**; parasite of, **136**
coccorum, Pachyneuron
Coccus hesperidum, in Italy, **545**; in Norway, **293**; in U.S.A., **292, 372**; on *Citrus*, **292, 372**; on ornamental plants, **293, 545**; ants associated with, **292**; parasites of, **292, 372, 545**; insecticides against, **293**
Coccus oleae (see *Saissetia*)
Cockroaches (see *Blattella*, *Leucophaea* and *Periplaneta*)
Coconut, *Opsiphanes tamarindi* on, in Costa Rica, **488**; *Nephantis serinopa* on, in India, **527**; relation of *Rhynchophorus palmarum* to nematode causing red-ring disease of, in Trinidad, **212, 499**
Codling Moth (see *Cydia pomonella*)
Coeloides (parasitising Coleoptera), in Germany, **429**; in U.S.S.R., **254**
Coeloides brunneri, bionomics of, parasitising *Dendroctonus pseudotsugae* in Oregon, **507**; effect of bark thickness on oviposition by, **507**
Coeloides dendroctoni, parasitising *Dendroctonus ponderosae* in British Columbia, **661**
coffeae, Geococcus; *Oligonychus*; *Zeuzera*
coffearia, Homona
Coffee, pests of, in Central African Republic, **440**; *Xyleborus compactus* on, in Cameroun Republic, **440**; *Leucoptera coma* on, in Congo, **668**; *Rhizoecus falcifer* on, in Dutch Guiana, **230**; pests of, in India, **177, 404, 527**; *X. compactus* on, in Indonesia, **517**; pests of, in Ivory Coast, **373, 434, 440**; *Leucoptera* spp. on, in Kenya, **536**; *X. compactus* on, in Nigeria, **119**; *Antestiopsis lineaticollis ghesquierei* on, in Rwanda and Burundi, **53**; pests of, in Tanganyika, **517, 669**; survey of data on *Leucoptera* spp. on, **668**; factors affecting susceptibility of, to *Stephanoderes hampei*, **434**; determination of insecticide residues on leaves of, **44**; (beans), *Araecerus fasciculatus* infesting, **631**
coffeella, Leucoptera (see *L. meyricki*)
coffeicola, Heterospilus; *Pediobius* (*Pleurotropis*)
coheni, Aphytis
Cola, Phosphorus virescens on, in Nigeria, **119**
Colastes braconius, bionomics and parasite of, parasitising *Napomyza lonicerella* in Italy, **630**
Colastus (see *Colopterus*)
Cold-hardiness, in aphids, **283**; in *Drosophila melanogaster*, **516**; in parasite of *Antonina graminis*, **272**
Colemania sphenarioides, damaging crops in India, **257**
Coleomegilla maculata (see *Ceratomegilla*)
Coleophora laricella, parasites of, on larch in Sweden, **41, 628**
Coleophora prunifoliae, parasitised by new Braconid in U.S.S.R., **136**
Coleus blumei, systemic activity of insecticides in, **108**; determination of insecticides in, **108, 640**
colfaxiana, Barbara
Colias eurytheme, on lucerne in California, **151, 497**; cross-transmission studies of viruses with, **403**; natural enemies of, **497**; tests of *Bacillus thuringiensis* against, **151**; sprays against, **151**
Collards, not infested by *Macrosteles fascifrons* in Colorado, **163**; parathion residues on, **361**
collaris, Amathes (*Graphiphora*)
collina, Podisma alpina
Colombia, insects transmitting bacterial wilt of banana in, **409**; cotton pests in, **284, 607, 608, 647**; other food-plants of *Pectinophora gossypiella* in, **608**; beneficial insects in, **607, 608**
Colopterus morio, transmitting canker fungus of *Platanus*, **351**
Colopterus semitectus, experiments with, as vector of oak wilt in Wisconsin, **369**
Colopterus truncatus, experiments with, as vector of oak wilt in Wisconsin, **369**
Colopterus unicolor, transmitting canker fungus of *Platanus*, **351**
Colorado, food-plant preferences of *Macrosteles fascifrons* in, **163**; *Microlarinus* spp. introduced into, for control of *Tribulus terrestris*, **496**
Colorado Beetle (see *Leptinotarsa decemlineata*)
Coloradoa rufomaculata (see *Rhopalosiphum*)
coloradus, Amphitornus
Colours, influence of, on food-plant selection by Aleyrodids, **302**; reactions of bark-beetles to, **694**

Colpognathus divisus, reared from *Chamaesphecia aerifrons* in France, **515**
Columbine, *Phytomyza minuscula* on, in Connecticut, **76** (See also *Aquilegia*)
coma, *Leucoptera*
comariana, *Acleris*
comitator, *Brachymeria*
Commelina, question of identity of virus disease of, in Puerto Rico, **649**
commodus, *Teleogryllus* (*Acheta*)
compactus, *Xyleborus* (*Xylosandrus*)
compensans, *Opius*
Comperiella bifasciata, parasite of *Chrysomphalus bifasciculatus* in Japan, **225**
compressus, *Janus*
comstocki, *Pseudococcus*
comstockii, *Ephialtes* (*Exeristes*)
concavocerarii, *Pseudococcus*
concinna, *Chaetocnema*
concolor, *Opius*
confine, *Euophryum*
confluens, *Cremastus*
confusa, *Blastothrix*; *Coccinella septempunctata*
confusum, *Tribolium*
confusus, *Ips*; *Xyleborus* (see *X. ferrugineus*)
congesta, *Liriomyza* (see *L. trifolii*)
Congo, *Trachyostus aterrimus* infesting timber in basin of, **376**
Congo (Leopoldville), *Leucoptera coma* on coffee in, **668**; Hemiptera on cotton in, **53**; survey of data on diseases and pests of crop plants in, **435**; distribution of forest pests in, **120**; *Forcipomyia* pollinating cacao in, **229**; outbreaks of *Locusta migratoria migratorioides* in, **174**; natural enemies of *L. coma* in, **668**
Congress of Crop Protection, Proceedings of Fourth International, **46, 467, 468, 589**
Congress of Entomology, Proceedings of Eleventh International, **295–298, 463–467, 588**
conicola, *Oscinella*
Conioscinella, species of, on cereals in Sweden, **560**
Connecticut, *Alsophila pometaria* on apple in, **17**; leaf-miners on ornamental plants in, **76**; forest pests in, **16, 452**
connexa, *Eriopis*
Conocephalus fasciatus, sprays against, on rice in Texas, **83**
Conoderus falli (on tobacco), in U.S.A., **260, 493**; resistance to insecticides in strains of, **260, 493, 503**
Conoderus vespertinus (on tobacco), in U.S.A., **260, 493**; insecticides against, **260, 493**; resistance to insecticides in strains of, **260**
Conophthorus radiatae, bionomics and parasite of, on *Pinus radiata* in California, **306**
Conorrhynchus luigionii (see *Cleonus*)
conotracheli, *Patasson* (*Anaphoidea*)
Conotrachelus anaglypticus, on *Aquilegia* in Ohio, **400**
Conotrachelus nenuphar, in Quebec, **3**; in Vermont, **655**; on apple, **3, 655**; natural enemies of, **3**; insecticides against, **3, 655, 656**; used in tests of insecticides, **8, 521**
conquisitor, *Itoplectis*
conradti, *Doliopygus*
constricta, *Agallia*; *Contarinia*; *Trichocerota*
Contarinia, on Douglas fir in Idaho, **577**
Contarinia constricta, in British Columbia and U.S.A., **215**; bionomics of, on Douglas fir, **215**
Contarinia cuniculator, bionomics of, on Douglas fir in British Columbia and Montana, **215**
Contarinia inouyei, on *Cryptomeria* in Japan, **413**; liberation of spider against, **413**
Contarinia medicaginis (on lucerne), in France, **550**; in Germany, **131**; in Italy, **550**; in Poland, **184**; bionomics and parasites of, **131, 550**; climatic factors regulating populations of, **131**; measures against, **131, 132, 184, 550**
Contarinia nasturtii, in Germany, **202, 471**; on brussels sprouts, **471**; rot associated with, **471**; forecasting emergence of, **202**
Contarinia oregonensis, on Douglas fir in U.S.A., **80, 367, 564**; distribution of overwintering stages of, **564**; parasite of, **80**; sprays against, **80, 367**
Contarinia pisi, sprays against, on peas in Britain, **343**
Contarinia pseudotsugae, bionomics and parasites of, on Douglas fir in British Columbia and U.S.A., **215**
Contarinia sorghicola (on sorghum), probable occurrence of, in S. Rhodesia, **126**; in Sudan, **433**; in Texas, **579**; bionomics and oviposition habits of, **580**; sprays against, **580**
Contarinia tritici, on wheat in Austria, **296**; varietal susceptibility of wheat to, **296**; natural enemies of, **296**
Contarinia virginianiae, bionomics of, on chokecherry in Quebec, **448**
Contarinia washingtonensis sp. n., on Douglas fir in British Columbia and U.S.A., **516**
convergens, *Hippodamia*
Convolvulus arvensis, *Macrosteles fascifrons* on, in Colorado, **163**; *Aculus*

lycopersici on, **20**; possible rôle of, as reservoir of aster-yellows virus, **163**
cooleyi, *Chermes* (*Adelges*)
Copidosoma geniculatum, parasitic on *Exoteleia dodecella*, **68**
Copper Oxychloride, in spray mixtures against orchard pests, **426**; efficiency of parathion increased by, **197**
Copper Sulphate, in mixed sprays against *Dacus oleae*, **195, 196, 420, 421, 631**; treatment of cut bamboos with, against *Dinoderus ocellaris*, **256**; influence of, on diapause in *Leptinotarsa decemlineata*, **644**; against *Prays oleellus*, **420**; efficiency of parathion increased by, **197** (See also Bordeaux Mixture)
Copra, *Necrobia rufipes* developing on, **121**
Coptotermes acinaciformis, habits of, damaging *Eucalyptus* in Australia, **610**
Coptotermes brunneus, habits of, damaging *Eucalyptus* in W. Australia, **610**
Coptotermes hyaloapex, in New Guinea, **517, 703**; attacking trees, garden plants and book, **517**; damaging cable, **703**
Coptotermes lacteus, question of repellent against, in teak, **110**
Coraebus fasciatus (*bifasciatus*), on cork oak in Spain, **679**
Coraebus undatus, on cork oak in Spain, **679, 680**; insecticides against, **680**
corchori, *Apion*
Corchorus (see Jute)
Corchorus trilocularis, swollen-shoot virus of cacao transmitted to, by *Planococcoides njalensis*, **118**
Corcyra cephalonica, influence of climate on infestation of flour mills by, **466**; *Trichogramma australicum* reared in eggs of, **514**
cordieri, *Formica*
Cordyceps aphodii, infesting *Aphodius tasmaniae* in S. Australia, **609**
coreopsidis, *Aphis*
Coriander Oil, in baits for *Oscinella frit*, **686**
Cork Oak (see *Quercus suber*)
Corn Borer, European (see *Ostrinia nubilalis*)
Corn Borer, South-western (see *Zeadiatraea grandiosella*)
Corn Earworm (see *Heliothis zea*)
corni, *Eulecanium* (*Lecanium*, *Parthenolecanium*); *Haltica* (*Altica*)
Cornus stolonifera, *Haltica corni* on, in Ontario, **587**
cornuta, *Elachiptera*
cornutus, *Gnathocerus*
corollae, *Syrphus*
Corpora allata, apparatus for removing, from locusts, **400**
Corsica, *Dacus oleae* on olive in, **204**; *Eurygaster maura* in, **314**; native and introduced parasites of *D. oleae* in, **204**
Corthylus punctatissimus, in Ontario, **660**; overwinter storage of fungus spores by, **660**
corticina, *Epuraea*
Coruna clavata, hyperparasite of *Macrosiphum pisum* in Czechoslovakia, **633**
corvina, *Trigona*
coryli, *Eulecanium* (*Lecanium*); *Monocesta*
Corylus avellana, *Hyphantria cunea* on, in Austria, **295**; *Sciaphobus squalidus* on, in Yugoslavia, **326**; influence of, on egg production by *H. cunea*, **295**
Corymbites lata (see *Ctenicera*)
Cosmia trapezina, on apple and plum in Bulgaria, **417**
Cosmolyce boetica, sprays against, on *Cajanus* in Ceylon, **618**
Cosmophila flava, on cotton in Queensland, **136**
Cosmopolites sordidus, in Honduras, **647**; on banana, **440, 647**; traps for, **647**; insecticides against, **647**
Cosmopteryx phaeogaster, bionomics of, on *Dolichos lablab* in India, **531**
Cossus cossus, bionomics of, on fruit and forest trees in U.S.S.R., **73, 74**; natural enemies of, **74**
Costa Rica, Lepidoptera on banana in, **487, 491**; rôle of *Heliconia* in relation to bacterial wilt of banana in, **408**; *Myzus circumflexus* on cacao in, **520**; *M. persicae* transmitting *Capsicum* virus in, **647**; *Opsiphanes tamarindi* on coconut in, **488**; Lepidoptera on other plants in, **488**; natural enemies of pests in, **488, 492**
costalimai, *Stylopalpia*
Costalimaita ferruginea, insecticides against, on fruit trees in Brazil, **519**
costalis, *Cuerna*
Costelytra, DDT against, in pastures in New Zealand, **178**
costirostris, *Listroderes*
Cotton, pests of, in Aden, **227, 228, 669**; review of pests of, in Africa, **112**; pests of, in Argentina, **285, 702**; *Tetranychus* spp. on, in Bulgaria, **394**; pests of, in Ceylon, **618**; *Diparopsis watersi* on, in Chad, **205**; Lepidoptera on, in China, **287, 391**; pests of, in Colombia, **284, 607, 608, 647**; Hemiptera on, in Congo, **53**; pests of, in Egypt, **28, 29, 30, 31, 32, 33, 34**; pests of, in Formosa, **612, 613**; pests of, in India, **49, 530**; *T. telarius* on, in Israel, **635**; pests of, in Kenya, **669, 670**; pests of, in Madagascar, **112, 440, 670**; pests of, in Morocco, **113**; *Empoasca devastans* on, in New

Britain, **121**; pests of, in Nigeria, **228, 229**; pests of, in Nyasaland, **228, 387, 634**; *E. devastans* on, in Pakistan, **121**; pests of, in Queensland, **121, 136**; *D. castanea* on, in S. Rhodesia, **228**; *E. devastans* on, in Siam, **121**; pests of, in Sudan, **105, 229, 431, 433, 627**; pests of, in Turkey, **35**; mites on, in Uganda, **534**; pests of, in U.S.A., **12, 22, 86, 87, 95, 97, 159, 160, 235, 265, 273, 305, 358, 360, 362, 367, 370, 495, 497, 504, 578, 579, 582**; pests of, in Venezuela, **297, 607**; list of pests of, in S.-E. Asia and Pacific area, **107**; key to Lepidopterous larvae attacking, **235**; other arthropods on, **82, 167, 500, 670**; experiments on chemical induction of resistance to *Anthonomus grandis* in, **363**; experiments with extracts of, on adult activity of *A. grandis*, **97, 269, 579**; dispersal of larvae of *Pectinophora gossypiella* on, **499**; estimation of losses of, caused by *P. gossypiella*, **360**; varietal susceptibility of, to pests, **29**; water status in relation to infestation of, **669**; cultural practices in relation to pests of, **136, 160, 362, 370, 582**; evaluation of insecticides against pests of, **229, 607**; use of insecticides in pre-emergence herbicide treatment for, **13**; seed treatment of, **113, 285, 613**; methods and results of systemic treatment of, with insecticides, **467, 534, 583**; DDT stimulating growth of, **34**; toxicity of insecticides to, **87, 265, 285, 583, 613**; metabolism of dimethoate in, **358**; plot size for experiments with, **670**

Cotton Bug, Red (see *Dysdercus koenigii*)

Cotton Dust, **30, 34**

Cotton Moth (see *Heliothis armigera*)

Cottonseed, insects infesting, **53, 647**; residues of azinphos-methyl in, **467**

Coturnix coturnix japonica, question of effects of DDT on, **656**

Cowpeas, *Prodenia litura* on, in Egypt, **30, 31**; *Melanagromyza phaseoli* on, in India, **532**; pests of field and stored, in Nigeria, **667**; question of fumigation of, **667**

coxendix, Oscinella

craccivora, Aphis (*Pergandeida*)

Crambus caliginosellus, on tobacco in N. Carolina, **15**; tests and uses of insecticides against, **15**

cramerella, Acrocercops

Cranberry, pests of, in Massachusetts, **18**; virus disease of, **356**

crassicornis, Umbonia

crassiuscula, Phobocampe

crassum, Sinoxylon

crataegella, Lithocolletis

crataegi, Aporia

Crataegus, insects on, in Britain, **230, 559, 560**; *Pammene rhediella* on, in Yugoslavia, **326**

Cratichneumon nigritarius, parasitising *Bupalus piniarius* in U.S.S.R., **71**

Cremastus biguttulus (see *C. flavoorbitalis*)

Cremastus confluens, parasitising *Rhyacionia buoliana* in Germany and Yugoslavia, **463**

Cremastus flavoorbitalis, parasitising *Susumia exigua* in Fiji, **270**; life-cycle of, parasitising *Chilo suppressalis* in Japan, **413**; parasites of, **270**

Crematogaster striatula, associated with Coccids on cacao in W. Africa, **116**; effects of endrin sprays on populations of, **116**

Cremifania nigrocellulata, introduced into New Brunswick, **593**; habits of, as predator of *Chermes piceae*, **593**

crepidis, Monoctonus

Crepidodera ferruginea, on cereals in Scotland, **700**

crepuscularia, Boarmia (*Ectropis*)

cressoni, Urocerus

o-Cresyl Methyl Ether (termite deterrent), isolated from teak, **110**

cretica, Sesamia

Cricotopus sylvestris, damaging rice in California, **78**; field-drainage as measure against, **78**

crinitus, Sitona

Criomorphus bicarinatus (see *Stiroma*)

Critheus, revision of, **314**

Critheus painei sp. n., on nipa palm in N. Borneo, **314**

Crocidolomia binotalis (on cabbage), in Ceylon, **618**; in Queensland, **390**; susceptibility of, to *Bacillus thuringiensis*, **618**; insecticides against, **390**

Cronartium ribicola, relation of, to infestation of *Pinus cembra* by *Pityophthorus lichtensteini*, **255**

Crop Protection, Proceedings of Fourth International Congress of, **298–300, 467, 468, 589**

Crossotarsus hardenbergi and *interruptus* (see *Doliopygus dubius*)

Crotalaria saltiana, as source of broad-bean virus in Sudan, **650**

Croton sparsiflorus, *Chrysocoris stollii* on, in India, **529**

cruciferarum, Bagrada

Cryolite, in sprays against *Earias insulana*, **113**; in dusts against cotton pests, **112**; toxicity of, to bees, **589**

Cryptarcha ampla, transmitting canker fungus of *Platanus* in New Jersey, **351**

Cryptococcus fagi, on beech in Germany, **102, 103**; question of relation of, to

necrosis of beech, **103**; insecticides against, **103**
Cryptognatha nodiceps, introduced into Fiji against *Aspidiotus destructor*, **58**
Cryptolaemus montrouzieri, in Bulgaria, **416**; predacious on *Planococcus citri* in Sicily, **198**; reared on aphids, **416**
Cryptolestes (in stored grain), in Sudan, **29**; species of, in Texas, **11**; tests and uses of insecticides against, **11, 12**
Cryptolestes capensis, influence of climate on infestation of flour mills by, **466**
Cryptolestes ferrugineus (in stored grain), in Canada, **218**; factors affecting populations of, **381, 466, 539**; used in tests of insecticides, **155**
Cryptolestes pusillus (in stored grain), in India, **530**; influence of climate on infestation of flour mills by, **466**; predator of, **530**; inert dusts against, **161, 499**
Cryptolestes turcicus, in S. Africa, Japan and Persia, **126**; introduced into Uganda from U.S.A., **126**; in stored cereals, **126, 381**; in flour mills, **126, 466**; factors affecting populations of, **381, 466**; synonymy of, **126**
Cryptomeria, *Contarinia inouyei* on, in Japan, **413**
Cryptophlebia illepida, on macadamia in Hawaii, **498**; insecticides against, **498**
Cryptorhynchus lapathi, in France, **245**; in Hungary, **57, 336**; in Italy, **37**; on basket willows, **57, 245, 336**; on poplar and other plants, **37, 337**; bionomics of, **37, 336**; measures against, **37, 57, 245, 337**
Cryptorhynchus mangiferae (see *Sternochetus*)
Cryptostemma, Tortricids on, in S. Africa, **112**
Cryptotermes brevis, question of repellent against, in teak, **110**
csikii, *Anisognathus*
Ctenicera aeripennis, distribution of, in relation to soils in Canada, **281, 282**; feeding activity of, **282**; considered distinct from *C. destructor*, **281**
Ctenicera destructor, distribution of, in relation to soils in Canada, **281, 282**; bionomics of, **282**; *C. aeripennis* considered distinct from, **281**
Ctenicera lata, treatment of maize seed against, in Yugoslavia, **394**
Ctenicera tarsalis, bionomics of, damaging apple in Quebec, **448**
Ctenomorphodes tessulatus, on *Eucalyptus* in Australia, **105**; diapause and parthenogenesis in, **105, 106**
Ctenophorocera pavida (see *Pales*)
Cuba, *Lixophaga diatraeae* in, **25**
cubanus, *Sogatodes* (*Chloriona*)
Cubé Root, **125** (See also Rotenone)
Cucumber, *Tetranychus telarius* on, in Britain, **210**; *T. telarius* on, in Holland, **439**; Coleoptera on, in Indiana, **239**; experiments with virus disease of banana and, **649**
Cucumber Beetle, Spotted (see *Diabrotica undecimpunctata howardi*)
Cucumber Beetle, Striped (see *Acalymma vittata*)
cucumeris, *Epitrix*; *Typhlodromus*
Cucurbita, *Anasa tristis* on, in Kansas, **157**; antibiotic effect of resistant varieties of, on nymphal development of *A. tristis*, **157**
cucurbitae, *Dacus* (*Chaetodacus*)
Cuerna costalis, transmitting virus of phony peach disease in Georgia, **17**; systemic use of Di-Syston against, **17**
Culex pipiens, use of, in bioassay of dimethoate residues, **39**
Culex pipiens fatigans (*quinquefasciatus*), use of, in tests of insecticides, **154, 155**
Cultural Practices, effects of: on infestation of cereals, **392, 478, 488, 656**; on cotton pests, **113, 160, 362, 370**; on diseases and insect fauna of lucerne, **131, 140, 188**; on other pests, **22, 24, 56, 57, 64, 77, 78, 132, 162, 174, 187, 238, 417, 457, 554, 613**
cunea, *Hyphantria*
cuneatus, *Brevipalpus*
cuniculator, *Contarinia*
cupreoviridis, *Earias*
Cupressus, *Phloeosinus armatus* on species of, in Greece, **59**
Cupressus macrocarpa, **59**
Cupressus sempervirens, **59**; *Carulaspis minima* on, in Italy, **328**
Cupric Oxide, in mixed sprays against *Citrus* pests, **371**
Curculio baculi, damaging acorns in W. Virginia, **154**; insecticides against, **154**
Curculio elephas, bionomics of, on chestnuts and acorns in Bulgaria, **191, 192**; on chestnuts in France, **548**; measures against, **192, 548**
Curculio proboscideus, damaging acorns in W. Virginia, **154**; insecticides against, **154**
Curculio rectus, damaging acorns in W. Virginia, **154**; insecticides against, **154**
Currant, *Bryobia ribis* on, in Austria, **473**
Currant, Black, *Cecidophyopsis ribis* on, in Britain, **169, 170, 304, 340, 341, 342**; *Aegeria tipuliformis* on, in Czechoslovakia, **333**; *A. tipuliformis* on, in Switzerland, **688**; *Quadraspidiotus perniciosus* on, in Yugoslavia, **299**; *C. ribis* deforming foliage of, **340**; reversion virus of, **342**; fungus in relation to

infestation of, by *A. tipuliformis*, **689**; endrin residues in fruit of, **304**; toxicity of lime-sulphur to, **342**
Currant Tomato (see *Lycopersicum pimpinellifolium*)
Currants (Stored), treatment of packaging materials for, against *Plodia interpunctella*, **232**
Curtonotus pennsylvanica (see *Amara*)
curvata, Aceratagallia
Cuscuta, transmission of *Delphinium* yellows by, **536**
cyanea, Haltica; *Melanophila* (*Phaenops*); *Scutellista*
Cybocephalus pulchellus, predacious on *Quadraspidiotus perniciosus* in Yugoslavia, **129**
Cyclamen, Steneotarsonemus pallidus on, in Victoria, **309**
Cyclocephala immaculata, in Illinois, **587**; light-trap for, **587**; method of rearing, **587**
Cyclo-eucalenol, **110**
cyclogaster, Tetrastichus
Cycloheximide, effects of, on aphids, **502**; effects of, on Tetranychids, **578**; translocation of, in peach trees, **578**; in sprays with insecticides, **578**
Cyclopentadiene, against *Cleonus* spp., **195**
Cydia, species of, damaging acorns in W. Virginia, **154**
Cydia funebrana (on plum), in Bulgaria, **188**; in Poland, **185**; bionomics of, in Rumania, **317**; insecticides against, **185, 188, 318**
Cydia glycinivorella (see *Leguminivora*)
Cydia latiferreana, **154**; on walnut in California, **658**; light-trap catches of, **658**
Cydia molesta, in Argentina, **399**; in Canada, **218, 361**; in New Jersey, **90**; on apple, **361**; on peach, **90, 218, 399**; parasite of, **399**; sprays against, **90, 218**; storage and treatment of apples against, **361**
Cydia nigricana (on peas), in Britain, **62, 388, 557**; in Finland, **64**; on *Vicia cracca*, **64**; influence of temperature on diapause in, **388**; effect of sowing date on infestation by, **64**; sprays against, **62, 64, 557**
Cydia pomonella (Codling Moth), in S. Africa, **111**; in Austria, **66, 67, 458, 472**; in Britain, **62, 304, 339, 340**; in Bulgaria, **186, 187, 393**; in Canada, **3, 142, 158, 224, 447, 483, 592, 596**; in France, **546**; in Germany, **338, 557, 628, 684**; in Greece, **60**; in Italy, **39, 677**; in Rumania, **318**; in U.S.S.R., **134, 135, 644**; in U.S.A., **82, 358, 496, 655, 657**; on apricots, **393**; on pear, **111, 358, 393, 657, 677**; on walnut, **358, 657**; bionomics and adult habits of, **39, 62, 67, 318, 339, 340, 358, 393, 448, 684**; influence of photoperiod on diapause and number of generations of, **644**; forecasting outbreaks of, **186**; natural enemies of, **3, 225, 319, 338, 448, 628**; diseases of, **319, 448, 483**; tests of micro-organisms against, **134, 135**; baits and traps for, **66, 358, 359, 657**; factors affecting light-trap catches of, **472**; effects of γ-radiation on, **483, 592**; use of sterilised adults for control of, **142, 158**; insecticides against, **3, 39, 46, 60, 67, 82, 111, 134, 135, 186, 246, 304, 319, 339, 340, 393, 458, 496, 596, 655, 656, 677**; timing of sprays against, **62**; use of larvae of, in tests of insecticides, **138**; forms of, **645**
Cydia resinosae sp. n., on red pine in Ontario, **597**
Cydia splendana, on chestnut in France, **548**; tests and uses of insecticides against, **548**
Cydia zebeana, bionomics of, on larch in Mongolia and U.S.S.R., **255**
Cylas formicarius, bionomics and fluctuations in populations of, on sweet potato in Formosa, **612**
Cylas formicarius elegantulus, on sweet potato in Fiji, **121**; dieldrin spray against, **121**
cylindrator, Sthenias
cylindrica, Sphaerophoria
cylindrirostris, Orthorrhinus
Cylindromyia binotata, parasitising *Euschistus servus* in Arkansas, **274**
Cyllenia maculata, parasitising *Periclista albipennis* in Portugal, **464**
Cynara, pests of: in France, **338**; in Sardinia, **676**
Cynem (see O,O-Diethyl O-2-Pyrazinyl Phosphorothioate)
Cynodon, pests of, in S. Rhodesia, **126**
Cynodon magennisii, Oscinella sp. on, in S. Rhodesia, **125**
cynthia, Attacus (*Philosamia*)
Cyperus tegetum, Sphenoptera deducta on, in India, **44**
Cypress (see *Cupressus*)
Cyprus, Pentatomids on cereals in, **313, 314**; *Dociostaurus maroccanus* in, **55**
Cyrtepistomus castaneus, occurrence of, in fields of leguminous forage plants in Maryland, **584**
Cyrtomenus mirabilis, on groundnut in Brazil, **446**
Cyrtoptyx dacicida, parasitising *Dacus oleae* in Italy, **197**

Cytovirin, effects of, on aphids, **502**; effects of, on *Panonychus ulmi*, **578**; derived from *Streptomyces* sp., **578**
Czechoslovakia, *Aegeria tipuliformis* on black currant in, **333**; *Macrosiphum pisum* on leguminous forage plants in, **333, 633**; forest pests in, **68, 69, 70, 219, 250, 251, 252, 332, 333, 399, 465, 480**; arthropod fauna of oaks in, **107**; vegetable pests in, **69, 623, 685**; virus diseases of plants in, **68, 69, 685**; pests of stored grain in, **466**; natural enemies of pests in, **62, 219, 251, 252, 332, 333, 399, 480, 623, 633**; bacterial and fungal diseases of insects in, **129, 252, 333**

D

dacicida, Cyrtoptyx (*Dinarmus*)
Dactylispa nigritula, on millet in Chad and Senegal, **107**
dactylopii, Leptomastix
Dacus, survey of data on natural enemies of species of, **516**
Dacus cacuminatus, in Australia, **311**; parasitised by *Opius* spp., **311**
Dacus cucurbitae, in Hawaii, **442, 492**; in Pakistan, **279**; infesting papaya, **492**; parasite of, **443**; effects of γ-radiation on development of, **263**; chemosterilants for, **94**; insecticides against, **492, 611**; development of resistance to insecticides in strain of, **611**
Dacus dorsalis, parasites of, in Hawaii, **310, 442, 489, 492**; in Vietnam, **526**; infesting fruits, **442, 489, 492, 526**; infesting vegetables, **489**; parasites of, **442**; effects of γ-radiation on development of, **263**; chemosterilants for, **94**; insecticides against, **489, 492**
Dacus oleae (on olive), in Corsica, **204**; in Italy, **39, 195, 196, 197, 200, 208, 241, 329, 330, 420, 421, 545, 631, 632**; in Yugoslavia, **128**; natural enemies of, **195, 197, 200, 201, 204, 205, 329, 420, 421, 632**; review of biological control of, **195**; effects of γ-radiation on, **329**; baits for, **329, 330**; tests and uses of insecticides against, **39, 45, 128, 195, 196, 197, 208, 241, 329, 330, 420, 421, 545, 631**; effects of malathion on midgut and nerve ganglia of, **542**; question of resistance to insecticides in strains of, **421**; other measures against, **329, 330**; method of rearing, **425**
Dacus tryoni, in Australia, **107, 310, 311**; parasite of, **310, 311**
Dacus zonatus, in Pakistan, **279**
Dahlbominus fuliginosus (*fuscipennis*), introduced parasite of *Neodiprion nanulus nanulus* in Wisconsin, **4**
Dakota, North, migration of *Macrosteles fascifrons* to, **152**
Dakota, South, *Toxoptera graminum* transmitting virus disease of oats in, **693**; ants associated with *T. graminum* in, **693**
Dalbulus maidis, feeding habits and food-plant range of, in relation to aster-yellows virus, **653, 654**; artificial feeding of, **653**
Dalpada eremica, bionomics of, on lemon and leguminous plants in Persia, **331**; sprays against, **331**
Damson, mites and beneficial arthropods on, in Austria, **65, 472, 473**
Dandelion (see *Taraxacum officinale*)
Daphnia, used in tests of insecticides, **8, 468**
Dasyneura abietiperda, bionomics and parasite of, on spruce in Germany, **337**
Dasyneura brassicae (on crucifers), in Denmark, **636**; in Germany, **132, 335, 687**; bionomics of, **637**; relation of *Ceutorhynchus assimilis* to, **636**; trap for, **637**; insecticides against, **132, 335, 687**
Dasyneura gentneri, on clovers in Britain, **633**
Dasyneura leguminicola, on red clover in Britain, **633**
Dasyneura mali, on apple in Bulgaria, **321**
Dasyneura piceae, on spruce, **337**; question of synonymy of, **337**
Datana major, on azalea in Florida, **272**
Date Palms, pests of, in Iraq, **123, 539**
Datura stramonium, Phthorimaea operculella on, in Bulgaria, **554**; aster-yellows virus transmitted to, by *Macrosteles fascifrons* in California, **649**
dauci, Aphidius
DD-136 (see *Neoaplectana*)
D-D Mixture (1,2-dichloropropane and 1,3-dichloropropene), as soil fumigant against emerging adults of *Rhagoletis pomonella*, **168**
DDD, against *Brevicoryne brassicae*, **390**; toxicity of, to *Dysdercus cingulatus*, **50**; ineffective against *Ceratitis* spp., **111**; against Lepidoptera, **51, 266, 308, 359, 390, 560**; resistance to, in strains of *Argyrotaenia velutinana*, **657**; against *Thrips tabaci*, **390**; comparative toxicity of, to arthropods, **155**; in sprays, **50, 51, 266, 308, 390, 560**; in bait-sprays, **111**
DDE, residues of, in egg of falcon, **642**
DDT, toxicity of, to *Aedes aegypti*, **355**; against Agromyzids, **29, 51**; against

Contarinia spp., **132, 343, 550**; metabolism of, in *Drosophila melanogaster*, **624**; susceptibility or resistance to, in strains of *D. melanogaster*, **624, 627**; against *Hylemya* spp., **108, 478, 602**; resistance to, in strains of *H. antiqua*, **108**; toxicity of, to *Musca domestica*, **8, 299 355**; against Trypetids, **3, 111, 187, 196, 197, 289, 290, 299, 300, 360, 420, 435, 611, 632, 656**; resistance to, in strain of *Dacus cucurbitae*, **611**; against aphids, **30, 124, 192, 227, 248, 262, 324, 341, 366, 530, 619**; against Cicadellids, **34, 698**; resistance to, in strains of *Erythroneura variabilis*, **24**; against Coccids, **5, 30, 136, 218, 426, 458, 665**; against Mirids, **140, 440, 504, 621**; against Pentatomids, **53, 677**; ineffective against *Carbula pedalis*, **372**; against other Hemiptera, **14, 24, 50, 124, 234, 307, 331, 502**; susceptibility or resistance to, in strains of *Aeneolamia varia saccharina*, **409**; against Curculionids, **3, 8, 10, 69, 86, 174, 192, 310, 497, 548, 556, 656, 671**; resistance to, in strains of *Anthonomus grandis*, **159**; against *Leptinotarsa decemlineata*, **248, 320, 323, 324, 698**; effects of sublethal doses of, on *L. decemlineata*, **475, 476**; against other Coleoptera, **18, 66, 85, 106, 132, 166, 170, 171, 178, 191, 211, 233, 246, 252, 320, 369, 380, 431, 441, 458, 465, 478, 520, 553, 571, 575, 680, 698**; effects of, on populations of Carabids, **664**; ineffective against *Migdolus morretesi*, **447**; against Noctuids, **30, 34, 81, 85, 86, 112, 163, 165, 256, 263, 293, 322, 323, 355, 359, 365, 414, 461, 482, 505 611, 647, 677**; ineffective against *Diparopsis watersi*, **628**; susceptibility or resistance to, in strains of Noctuids, **93, 578**; against Pyralids, **15, 49, 82, 85, 86, 318, 417, 442, 461, 477, 514, 526, 616, 655**; against Tortricids (*sens. lat.*), **3, 51, 60, 62, 64, 67, 187, 188, 189, 218, 247, 266, 284, 304, 319, 327, 328, 339, 340, 393, 496, 548, 558, 560, 577, 581, 619, 646, 656, 673**; *Argyrotaenia velutinana* favoured by, **657**; against other Lepidoptera, **34, 56, 57, 71, 87, 88, 129, 134, 135, 136, 137, 178, 197, 217, 241, 308, 331, 359, 360, 420, 440, 450, 477, 478, 498, 499, 500, 526, 529, 544, 547, 554, 580, 632, 664, 676, 677**; effects of, on life-span and fecundity of *Pectinophora gossypiella*, **149**; against Hymenoptera, **134, 198, 249, 478**; susceptibility or resistance to, in strains of cockroaches, **8, 300**; against grasshoppers and locusts, **163, 528, 621**; toxicity of, to termites, **250, 251, 619**; against thrips, **12, 13, 436**; against mites, **134, 150, 297, 534**; Tetranychids favoured by, **41, 60, 340, 670**; question of effects of, on fecundity of *Tetranychus telarius*, **206**; resistance to, in strains of *Typhlodromus fallacis*, **490, 491**; effects of, on beneficial arthropods, **30, 65, 71, 72, 108, 112, 133, 136, 140, 192, 218, 227, 248, 252, 426, 619, 665, 666**; resistance to, in honey bees, **95**; comparative toxicity of, to arthropods, **155**; use of, in determining insect fauna of bitterbrush, **580**; in relation to insect cuticle, **697**; effects of, on plants, **34, 258, 301, 324, 580**; development of *Beauveria bassiana* unaffected by, **393**; question of effects of, on Japanese quail, **656**; absorption of, by fish, **400**; relation of structure to toxicity of, **355**; other factors affecting toxicity and efficiency of, **52, 299, 697**; solutions of, **170, 187, 233, 251**; emulsified solutions of, **18, 64, 106, 206, 233, 246, 258, 288, 289, 290, 320, 323, 324, 498, 500, 571, 575, 611, 616, 619, 647, 655, 664, 673**; in wettable-powder suspensions, **88, 299, 331, 482, 580, 619, 696**; in aerosols, **56, 57, 134, 187, 188, 189, 300, 440**; in bait-sprays, **111**; in dusts, **34, 49, 52, 53, 66, 69, 71, 86, 87, 106, 112, 174, 191, 192, 206, 211, 246, 252, 262, 263, 301, 308, 320, 322, 323, 324, 359, 365, 393, 409, 417, 431, 440, 441, 447, 475, 476, 477, 478, 526, 550, 553, 554, 556, 656, 670, 676**; in granules, **81, 178, 655**; in mist, **14**; in sprays, **3, 5, 12, 13, 18, 24, 29, 30, 34, 49, 50, 51, 60, 62, 64, 65, 66, 67, 69, 81, 82, 85, 86, 87, 106, 112, 113, 124, 129, 132, 136, 137, 140, 149, 150, 163, 165, 166, 187, 189, 191, 197, 198, 206, 211, 217, 218, 227, 229, 233, 234, 241, 246, 247, 248, 249, 252, 258, 266, 284, 289, 297, 299, 304, 307, 310, 318, 319, 320, 323, 324, 327, 328, 331, 340, 341, 343, 359, 360, 366, 372, 393, 420, 426, 435, 436, 440, 441, 442, 450, 458, 461, 465, 467, 482, 497, 498, 499, 500, 504, 505, 514, 520, 526, 529, 534, 544, 547, 548, 550, 554, 558, 560, 571, 575, 577, 580, 581, 602, 616, 619, 621, 628, 632, 646, 647, 655, 656, 664, 665, 666, 670, 671, 673, 677, 680, 697, 698**; as deposit, **150, 499**; factors affecting persistence of deposits of, **467, 577, 616**; applied from aircraft, **24, 56, 57, 71, 81, 217, 284, 308, 450, 581, 655**; applied in transplanting water, **15**; treatment of planting material with, **288, 580**; treatment of nests with, **619**; soil treatment with, **15, 178, 179, 191, 256, 369, 409,**

644; persistence of, in soil, **179, 234, 369, 522**; uses of, against pests of stored products, **288, 301, 696**; treatment of timber with, **233**; residues of, in plants and plant products, **178, 197, 304, 632, 656, 697**; residues of, in milk and tissues of cattle, **88**; tolerance limit for, **178**; bioassay and determination of, **369, 522**; labelled with ^{14}C, **400**; effect of compaction on storage stability of, **703**; and azinphos-methyl, **12, 13, 87, 113, 628**; and bacteria and fungi, **129, 134, 135**; and BHC, **29, 30, 66, 69, 85, 106, 112, 132, 134, 191, 192, 229, 247, 252, 293, 320, 322, 323, 324, 327, 341, 417, 477, 478, 670, 676, 680**; and Cereclor, **229**; and chlorobenzilate, **187**; and diazinon, **82, 124, 441**; and Dibrom, **82, 85**; and N,N-di-n-butyl-p-chlorobenzenesulphonamide, **575**; and dieldrin, **343, 496**; and dimethoate, **534**; and endrin, **86, 112, 137, 441, 496, 628**; and fenthion, **85**; and fungicides, **227**; and Kelthane, **496**; and lead arsenate, **656**; and malathion, **5, 53, 198, 409, 550**; and methyl-parathion, **12**; and Methyl Trithion, **85**; and oils, **426, 461, 465, 581, 656**; and parathion, **60, 197, 198, 262, 290, 331, 420, 544, 550, 632, 677**; and phenkapton, **187**; and phosphamidon, **85**; and polybutene, **150**; and Sevin, **409**; and Shell SD-3562, **13**; and strobane, **86**; and sulphur, **30**; and Tedion, **496**; and Thiodan, **82, 85, 496**; and toxaphene, **12, 13, 86, 159, 496, 579**; and trichlorphon, **85, 343, 628**; synergism of other insecticides with, **370**

DDT-dehydrochlorinase, in *Epilachna varivestis*, **236**

DDVP (see Dichlorvos)

Decachlorobi-2,4-cyclopentadien-1-yl, effects of, on *Tetranychus* spp., **366**

Decachlorooctahydro-1,3,4-metheno-2H-cyclobuta[cd]pentalen-2-one (see 2,3,3a,4,5,6,7,7a,8,8-Decachloro-3a,4,-7,7a-tetrahydro-4,7-methanoindene-1-one)

2,3,3a,4,5,6,7,7a,8,8-Decachloro-3a,4,7,-7a-tetrahydro-4,7-methanoindene-1-one, in baits for ants, **264, 493**; in sprays against *Phyllocoptruta oleivora*, **371**; and cupric oxide, **371**; and Tedion, **371**

Decatoma trogocarpi, parasitising *Eumegastigmus pistaciae* in Sicily, **198**

decedens, Empoasca

decemlineata, Leptinotarsa

decempunctata, Adalia (*Coccinella*)

decempustulata, Adalia (see *A. decempunctata*)

decipiens, Sitona

decolor, Ectomyelois (*Myelois*)

Dedelin, containing DDT and BHC (*q.v.*), **323, 477**

deducta, Sphenoptera

deesae, Glyptomorpha (*Stenobracon*)

deflexus, Eotetranychus

deflorata, Cassida

defoliaria, Erannis

Delaware, parasite of *Hypera punctata* in, **148**

Delnav (see 2,3-p-Dioxane S,S-Bis(O,O-diethyl phosphorodithioate))

Delphacodes (*Delphax*) *striatella* (see *Laodelphax*)

Delphinium, Cicadellids in relation to viruses of, in Britain and U.S.A., **535, 536**

Demeton, against aphids, **14, 21, 30, 156, 242, 324, 333, 351, 366, 397, 605, 623**; ineffective against *Phylloxera vitifoliae*, **187**; against Coccids, **5, 30, 293**; against other Hemiptera, **623**; against Diptera, **21, 623**; ineffective against *Frankliniella tritici*, **11**; against *Hylobius radicis*, **10**; against Lepidoptera, **14, 21, 30, 669**; toxicity of, to *Locusta migratoria*, **621**; tests and uses of, against mites, **9, 11, 134, 166, 319, 656**; susceptibility or resistance to, in strains of *Tetranychus* spp., **203, 495**; effects of, on beneficial arthropods, **2, 30, 333, 497, 623**; comparative toxicity of, to arthropods, **155**; toxicity of, to man, **670**; distribution and metabolism of, in mammals, **467**; development of *Beauveria bassiana* inhibited by, **393**; detection of residues and metabolites of, **460**; in aerosols, **134**; in sprays, **2, 14, 21, 30, 166, 187, 242, 293, 324, 333, 351, 397, 495, 621, 623, 669**; seed treatment with, **299**; soil treatment with, **5**; as plant dip, **293**; tests of systemic action and other methods of application of, **11, 242, 299, 319, 366, 397**; and methyl-parathion, **393**; and parathion, **393**

Demeton-S, tests of systemic action and other methods of application of, **182**; labelled with ^{32}P, **182**

demodocus, Papilio

Dendrobacillin, spore-preparation of *Bacillus thuringiensis dendrolimus* (*q.v.*), **75**

Dendrocalamus strictus, treatment of cut canes of, against infestation by *Dinoderus ocellaris* in India, **256**

dendroctoni, Coeloides

Dendroctonus brevicomis, on *Pinus ponderosa* in U.S.A., **354, 702**; population dynamics of, **702**; flight habits of, **354**; attractants for, **354**

Dendroctonus micans, bionomics of, on spruce in U.S.S.R., **183**; BHC sprays against, **183**
Dendroctonus ponderosae (*monticolae*) (on lodgepole pine in Canada), bionomics of, **224, 661, 662**; natural enemies of, **662**; other mortality factors of, **661**; effects of, on moisture content of timber, **447**; and blue-stain infection, **447**
Dendroctonus pseudotsugae (on Douglas fir), in British Columbia, **109, 597**; in U.S.A., **10, 450, 507**; infestation patterns of, **10**; effects of crowding on populations of, **109**; flight habits of, **597**; attractant produced by females of, **450, 597**; parasite of, **507**; sampling of bark infested by, **572**; method of rearing, **452**
Dendrolimus pini, experiments with *Trichogramma embryophagum* and eggs of, **533**
Dendrolimus superans (*sibiricus*), on conifers in U.S.S.R., **75, 254**; as precursor of infestation of bark-beetles, **254**; larval habits of, **75**; induction of diapause in, **75**; parasites of, **75**; *Bacillus thuringiensis dendrolimus* against, **75, 76**
Denmark, *Aphis maidis* on barley in, **427**; pests of rape in, **636**; pests of vegetables in, **344, 398, 424, 427**; virus disease of potato in, **426**; *Hylotrupes bajulus* in, **640**; *Melolontha melolontha* in, **398**
denticornis, *Limothrips*
dentriticus, *Melichares*
Deois schach, insecticides against, on grasses in Brazil, **307**
Deoxyribonucleic Acid, in polyhedrosis virus, **405**; in *Lambdina* larvae, **405**
Depressaria erinaceella, sprays against, on globe artichoke in Sardinia, **676**
Depressaria subpropinquella, on globe artichoke in France, **338**; parasites of, **338**
depressella, *Emmalocera*
depressirostris, *Gasterocercus*
Dereodus recticollis, on maize in N. Rhodesia, **126**; misidentified as *Buphonella murina*, **126**
Dermestes maculatus (*vulpinus*), bionomics of, infesting hides and skins in India, **674**; factors affecting development of, **674**; diet for, **414**
derogata, *Sylepta*
derourei, *Praxithea*
Derris, treatment of mushroom beds with, against *Heteropeza pygmaea*, **384**
Desiantha maculata, bionomics of, on carrot and onion in Australia, **310**; sprays against, **310**
destructor, *Aspidiotus*; *Ceroplastes*; *Ctenicera*; *Glycyphagus*; *Mayetiola* (*Phytophaga*); *Tribolium*
destruens, *Xyleborus*
Detox 25 (see DDT)
devastans, *Empoasca*
devecta, *Anuraphis* (*Sappaphis*)
Dewberry, *Panonychus* sp. on, in Virginia, **19**
Dexia rustica, parasitising Lamellicorn larvae in France, **194, 195**; established in New York, **195**
Dexia vacua, parasitising *Amphimallon majalis* in France, **194**; introduced into New York, **195**
Dexilla (see *Dexia*)
Diabrotica balteata, bionomics of, on sweet potato in Louisiana, **156**
Diabrotica duodecimpunctata, auct. (see *D. undecimpunctata howardi*)
Diabrotica longicornis, insecticides against, on maize in Illinois, **272**; resistance to insecticides in strains of, **272**
Diabrotica undecimpunctata howardi (in U.S.A.), on cucumber, **239**; on groundnut, **260**; on maize, **272**; *Geotrichum candidum* isolated from, **350**; apparatus for study of flight patterns in, **271**; use of light-traps against, **239**; insecticides against, **260, 261, 272**; resistance to insecticides in strains of, **260**
Diabrotica virgifera, on maize in Nebraska, **5, 6**; toxicity of aldrin to, **6**; resistance to insecticides in strains of, **5**
Diacrisia imparilis, on forest trees, fruit trees and other plants in Japan, **412**
Diacrisia lubricipeda, bionomics of, on apple in Bulgaria, **189**
Diacrisia obliqua, on jute in E. Pakistan, **623**
diadema, *Sinea*
Diaeretus rapae, bionomics and parasites of, parasitising aphids in Holland, **518**
dianthica, *Tetranychus*
Diaphania hyalinata, sprays against, on melons in Texas, **14**
Diaphnidia pellucida, predacious on *Cydia pomonella* and *Typhlodromus pyri* in Nova Scotia, **142, 225**
Diaphorina citri, bionomics of, on *Citrus* in W. Pakistan, **622**; sooty mould in relation to, **622**; insecticides against, **231, 622**
Diaspidiotus perniciosus (see *Quadraspidiotus*)
Diaspidiotus viticola, on vines in Italy, **630**; parasite and hyperparasite of, **630**
diaspidis, *Aphytis*
Diatomaceous Earth (Diatomite), against Coleoptera in stored foodstuffs, **161, 300, 499**

Diatraea, question of introduction of parasites of, from America to Pakistan, **279**; species of, on sugar-cane in Venezuela, **606**
Diatraea busckella, on sugar-cane in Venezuela, **606**; liberation of parasite against, **606**
Diatraea saccharalis, in U.S.A., **8, 153, 501**; in Venezuela, **606**; in West Indies, **25, 26, 279, 513**; on sorghum, **8, 26**; on sugar-cane, **25, 26, 153, 279, 501, 513, 606**; effects of diet on development of, **8**; parasites of, **25, 26, 153, 279, 280, 606**; question of value of insecticides against, **501**
diatraeae, *Lixophaga*
Diatraeophaga striatalis (parasitising *Proceras sacchariphagus*), in Java, **276, 514**; attempted introduction of, into Mauritius, **276, 277**; question of introduction of, into Réunion, **514**; bionomics and parasites of, **276**
Diazinon, against aphids, **120, 204, 262, 324, 366, 390**; against Coccids, **5, 150, 293, 447, 620**; against other Hemiptera, **124, 163**; against Cecidomyiids, **76, 77, 132, 343, 384, 550, 580**; susceptibility or resistance to, in strains of *Drosophila melanogaster*, **627**; against *Hylemya* spp., **602, 604**; against Trypetids, **59, 128, 197, 360, 420**; tests and uses of, against other Diptera, **8, 15, 76, 77, 93**; against Coleoptera, **5, 8, 260, 261, 441, 520**; against Noctuids, **81, 93, 163, 414**; against Pyralids, **15, 16, 86, 514**; hatching of eggs of *Ostrinia nubilalis* inhibited by, **82**; against Tortricids, **51, 82, 266, 340, 578**; against other Lepidoptera, **76, 77, 121, 390, 526, 529, 536, 537**; ineffective against *Phthorimaea operculella*, **137**; against *Fenusa pusilla*, **76, 77**; against grasshopper, **163**; toxicity of, to *Periplaneta americana*, **8**; against *Thrips tabaci*, **390**; against mites, **287, 288, 332**; *Panonychus ulmi* favoured by, **340**; resistance to, in strains of Tetranychids, **656, 691**; effects of, on beneficial arthropods, **2, 104, 204, 666**; comparative toxicity of, to arthropods, **155**, development of *Beauveria bassiana* unaffected by, **393**; in dusts, **197, 262, 550**; in granules, **19, 163, 261, 602, 604**; in sprays, **2, 5, 19, 51, 59, 76, 77, 81, 82, 83, 120, 121, 128, 132, 137, 150, 163, 197, 258, 266, 287, 288, 293, 324, 332, 340, 343, 360, 390, 420, 441, 514, 520, 526, 529, 536, 537, 550, 578, 580, 602, 620, 666**; applied from aircraft, **81**; factors affecting persistence of deposits of, **578**; applied in transplanting water, **16, 260**; seed treatment with, **604**; soil treatment with, **15, 16, 260, 261, 602**; treatment of mushroom beds with, **384**; treatment of potato tubers with, **366**; as plant dip, **293**; residues of, on plants, **19, 83, 128**; residues of, in milk and silage, **44**; analytical methods for, **400**; and DDT, **82, 124, 343, 441**
Dibrachys cavus, hyperparasite of *Malacosoma neustria* in U.S.S.R., **72**
Dibrom (see Dimethyl 1,2-Dibromo-2,2-dichloroethyl Phosphate)
1,2-Dibromo-3-chloropropane (as soil fumigant), against emerging adults: of *Rhagoletis pomonella*, **168**; of *Magicicada septendecim*, **587**
1,2-Dibromoethane (see Ethylene Dibromide)
N,N - Di - n - butyl - p - chlorobenzenesulphonamide, as synergist with DDT, **575**
Dicapthon, toxicity of, to Coleoptera, **383**; persistence of residues of, **383**; vapour toxicity of, **383**
Dichlone (see 2,3-Dichloro-1,4-naphthoquinone)
p-Dichlorobenzene, in fumigant mixture against *Phylloxera vitifoliae*, **253**
1,1 - Dichloro - 2,2 - bis(p - ethylphenyl) - ethane, determination of, in fat and milk of mammals, **44**
Dichloroethane (see Ethylene Dichloride)
5,6 - Di(chloromethyl) - 1,2,3,4,7,7 - hexachlorobicyclo[2.2.1]heptene-2, question of use of, against pests of stored products, **299**; data on toxicity of, **299**
2,3 - Dichloro - 1,4 - naphthoquinone, in spray mixtures against apple pests, **227, 509, 565**
1,1 - Di(p - chlorophenyl) - 1 - deuterium - 2,2,2-trichloroethane, use of, in experiments on mode of action of DDT, **355**
Dichloropropane (see Propylene Dichloride)
1,2-Dichloropropane, in D-D mixture (*q.v.*). **168**
1,3-Dichloropropene, in D-D mixture (*q.v.*), **168**
Dichlorvos, against Aleyrodids and aphids, **503**; ineffective against Coccids, **503**; unsatisfactory against *Conoderus vespertinus*, **260**; against Lepidoptera, **503**; against mites, **453, 503**; in dusts, **453**; soil treatment with, **260**; vapour toxicity of, **503**; and silica gel, **453**
Dichromorpha viridis, decay of ^{32}P in, **525**
Dichroplus, oviposition sites of species of, in Argentina, **483**; question of *Atriplex* barriers against, **483**
Dichroplus maculipennis, **483**; as erosion factor in Argentina, **292**
Dichroplus pratensis, **483**

Dicladispa armigera, on rice in India, **571**; parasite of, **571**
Dicladispa gestroi, on rice in Madagascar, **441**; insecticides against, **441**
Dicondylus helleni sp. n., parasitising Delphacids in Finland, **516**
Dicranotropis muiri, bionomics and parasites of, on sugar-cane in Madagascar, **513**
Dictyosperma album, *Brontispa limbata* on, in Mauritius, **457**
dictyospermi, *Chrysomphalus*
Didifos, containing DDT and parathion (*q.v.*), **198, 290, 632**
Diditin (see DDT)
Didymuria violescens, on *Eucalyptus* in Australia, **105**; diapause and parthenogenesis in, **105, 106**
Dieldrex (see Dieldrin)
Dieldrin, against ants, **115, 116, 201**; toxicity of, to aphids, **248**; against Coccids, **115**; ineffective against *Gossyparia spuria*, **5**; against Mirids, **117, 163, 504**; against other Hemiptera, **50, 83, 163, 441, 526, 622, 698**; against *Contarinia* spp., **131, 184, 343, 550**; against *Hylemya* spp., **108, 281, 345**; ineffective against *H. antiqua*, **605**; susceptibility or resistance to, in strains of *Musca domestica*, **8, 524**; against *Oscinella* spp., **152, 558**; against *Psila* spp., **211, 559**; against Trypetids, **111, 168, 446, 611**; resistance to, in strain of *Dacus cucurbitae*, **611**; against other Diptera, **108, 459, 618**; resistance to, in strains of Anthomyiids, **93**; against Curculionids, **9, 89, 121, 310, 500, 549, 647**; against *Leptinotarsa decemlineata*, **248, 320, 323, 698**; effects of sublethal doses of, on *L. decemlineata*, **475**; against other Coleoptera, **106, 116, 132, 153, 166, 170, 171, 174, 185, 191, 211, 233, 246, 304, 369, 371, 380, 431, 440, 458, 520, 618, 619, 672, 673, 698**; resistance to, in strains of *Conoderus*, **260**; against *Cephus cinctus*, **157**; against Noctuids, **163, 165, 323, 414, 611, 618, 677**; resistance to, in strains of Noctuids, **93**; against Pyralids, **86, 442, 618**; against other Lepidoptera, **34, 84, 121, 330, 390, 490, 498, 527, 580, 618, 677**; other effects of, on Lepidoptera, **45, 116, 119**; against *Forficula auricularia*, **261**; against grasshoppers and locusts, **83, 163, 230, 257, 528, 540, 621**; toxicity of, to *Periplaneta americana*, **8**; against termite, **619**; against thrips, **291, 436, 618**; ineffective against *Tetranychus* sp., **119**; effects of, on beneficial insects, **83, 121, 185, 248, 619, 673**; toxicity of, to bees, **323**; resistance to, in predacious mites, **491**; residues of, in eggs and tissues of predatory birds, **642**; metabolism of, in mice, **524**; effects of, on plants, **211, 258, 572**; development of *Beauveria bassiana* unaffected by, **393**; in bait-sprays, **111**; in dusts, **106, 174, 184, 211, 257, 345, 371, 390, 431, 475, 550, 559**; evaluation of fillers for dusts of, **46**; in granules, **89, 153, 163, 261, 371, 647**; leaching of, from clay granules, **502**; in sprays, **5, 34, 45, 50, 83, 84, 106, 115, 116, 119, 121, 131, 132, 163, 165, 166, 185, 201, 211, 230, 246, 248, 258, 261, 291, 304, 310, 320, 323, 330, 343, 371, 380, 436, 440, 442, 446, 458, 459, 490, 498, 504, 420, 527, 540, 549, 550, 558, 559, 618, 619, 621, 672, 673, 677, 698**; as deposit, **261**; applied from aircraft, **83, 540**; seed treatment with, **211, 345, 431, 572**; soil treatment with, **9, 153, 157, 168, 191, 257, 260, 281, 345, 369, 380**; residues of, in soil, **369**; treatment of planting material with, **260, 345, 580**; treatment of nests with, **619**; treatment of timber with, **233**; uses of, against pests of stored products, **673**; lacquer formulation of, **673**; residues of, in plants, **281, 380, 384, 496, 516**; tolerance limit for, **281**; precautions in use of, **619**; as metabolite of aldrin, **160, 384, 581, 582**; detection of metabolites of, in urine, **44**; bioassay of, **369, 502**; determination of, **46, 304, 516**; selection of solvents for use with, **502**; labelled with ^{36}Cl, **524**; and aldrin, **673**; and BHC, **131, 132**; and DDT, **370**; and dimethoate, **330**; and parathion, **291**
O,O-Diethyl O-2-(sec.-Butoxymethylthio)ethyl Phosphorothioate, vapour toxicity of, to Coleoptera, **383**
Diethyl 2-Chlorovinyl Phosphate, against *Gossyparia spuria*, **5**; tests of systemic action and other methods of application of, **5**
O,O-Diethyl S-(α-Cyanobenzyl) Phosphorodithioate, toxicity of, to Coleoptera, **382**
O,O-Diethyl S-2-Cyanoisopropylcarbamoylmethyl Phosphorodithioate, tests of, against aphids and mites, **210**
O,O-Diethyl S-2-Cyanoisopropylcarbamoylmethyl Phosphorothioate, tests of, against aphids and mites, **210**
Diethyl 1-(2,4-Dichlorophenyl)-2-chlorovinyl Phosphate, against Coleoptera, **260, 265**; against *Heliothis zea*, **265**; toxicity of, to *Tetranychus cinnabarinus*, **265**; tests of systemic activity and other methods of application of, **260, 261, 265**

Diethyl 1-(2,5-Dichlorophenyl)-2- chlorovinyl Phosphate, against *Anthonomus grandis*, **265**; toxicity of, to *Tetranychus cinnabarinus*, **265**; of little value against *Heliothis zea*, **265**; systemic activity of, **265**

O,O-Diethyl O-2,4-Dichlorophenyl Phosphorothioate, tests of systemic activity of: against *Conoderus vespertinus*, **260**; against Diptera, **93, 602, 604**; against *Eriosoma lanigerum*, **120**

O,O-Diethyl S-(Dimethyldithiocarbamoyl)methyl Phosphorodithioate, toxicity of, to eggs of *Tetranychus telarius*, **433**

O,O-Diethyl S-Ethoxycarbonylcarbamoylmethyl Phosphorodithioate, toxicity of, to Coleoptera, **383**; relation of structure to toxicity of, **299**; persistence of residues of, **383**

O,O-Diethyl O-(Ethoxycarbonylmethylthio)ethyl Phosphorothioate, vapour toxicity of, to Coleoptera, **383**

O,O-Diethyl S-2-(Ethylthio)ethyl Phosphorodithioate, against Agromyzids, **29, 76, 495**; against other Diptera, **298, 698**; against aphids, **61, 242, 267, 285, 366, 450, 495, 496, 605**; against other Hemiptera, **17, 274**; against Coleoptera, **132, 154, 383, 454**; against larvae of Lepidoptera, **274**; ineffective against *Celama sorghiella*, **581**; against *Fenusa pusilla*, **16**; against thrips, **11, 285, 495**; toxicity of, to *Tetranychus* spp., **9, 11, 495**; phytotoxicity of, **17, 61, 285, 366, 583, 698**; residues of, in peas, **267**; in granules, **5, 11, 16, 17, 61, 99, 132, 154, 242, 366, 496, 581, 698**; in sprays, **76**; seed treatment with, **29, 61, 274, 285, 299**; soil treatment with, **5, 99, 267, 274, 454, 495, 698**; vapour toxicity of, **383**; tests of systemic action and other methods of application of, **11, 16, 17, 61, 154, 242, 267, 285, 298, 366, 450**

O,O - Diethyl S - Isopropylcarbamoylmethyl Phosphorodithioate, against aphids, **210**; against *Pseudaulacaspis pentagona*, **423**; against Tetranychids, **210, 290, 543, 552**; effects of, on beneficial insects, **423**; in sprays, **290, 423, 543, 552**; and fenson, **290**; and oil, **423**; and Tedion, **543**

O,O-Diethyl O-p-Methylsulphinylphenyl Phosphorothioate, against thrips, **12**; against *Conoderus vespertinus*, **260**; in sprays, **12**; applied in transplanting water, **260**

O,O-Diethyl Phosphorazidothioate, vapour toxicity of, to Coleoptera, **383**

O,O-Diethyl O-2-Pyrazinyl Phosphorothioate, against Coleoptera, **261, 454**; against Diptera, **15, 602, 604**; toxicity of, to *Eurytoma roddi*, **588**; against *Heliothis zea*, **263**; against Hemiptera, **81, 587, 588**; toxicity of, to onion, **604**; in dusts, **263**; in granules, **81, 261, 604**; in sprays, **602**; soil treatment with, **81, 261, 454, 587, 604**; systemic activity of, **81**

Diethylene Glycol, as solvent for dieldrin, **502**

differentialis, Melanoplus

Digitaria decumbens, Cercopids on, in Brazil, **307**; *Aeneolamia varia saccharina* on, in Trinidad, **459**; insecticide residues on, **307**

dignoides, Telenomus

O,O - Diisopropyl S - p - Chlorobenzyl Phosphorodithioate, toxicity of, to Coleoptera, **383**; persistence of residues of, **383**

Dilan (in sprays), against Coleoptera, **698**; against Hemiptera, **150, 698**

diluta, Xylotachina

Dimecron (see Phosphamidon)

Dimefox, against *Cecidophyopsis ribis*, **341, 342**; toxicity of, to vines, **182**; labelled with ^{32}P, **182**; tests of systemic activity and other methods of application of, **182, 342**

Dimetan, susceptibility or resistance to, in strains of *Drosophila melanogaster*, **627**

Dimethoate, against Agromyzids, **52, 459, 495**; against Cecidomyiids, **243, 298, 367, 384, 580**; against Trypetids, **37, 38, 39, 45, 46, 59, 128, 196, 197, 208, 241, 289, 329, 330, 420, 421, 632**; against aphids, **61, 81, 120, 141, 208, 366, 495, 605**; against Coccids, **96, 150, 208, 293, 423**; against Mirids, **163, 504**; against other Hemiptera, **14, 148, 331, 503, 677**; against Curculionids, **88, 174, 357**; toxicity of, to *Harpalus rufipes*, **380**; against Tortricids, **45, 46, 60, 592**; against other Lepidoptera, **38, 246, 321, 329, 330, 357, 442, 544, 677**; ineffective against Lepidoptera, **16, 119**; against grasshoppers, **148**; against thrips, **495**; toxicity of, to mites, **9, 45, 46, 119, 208, 341, 342, 495, 534, 541, 669**; toxicity of, to beneficial insects, **88, 423**; beneficial mites unharmed by, **2**; mammalian toxicity of, **45, 455, 494**; toxicity of, to fish, **592**; anticholinesterase activity of, **494**; metabolism of, **45, 357, 358, 455**; residues of, in plants and plant products, **37, 39, 44, 128, 197, 208, 241, 329, 330, 460, 632**; phytotoxicity of, **11, 208, 293, 504**; detection and estimation of residues of, **44, 460**;

bioassay of, **37, 39, 208**; paper chromatography of, **37**; in dusts, **16, 39, 128, 174, 197, 420, 421, 632**; in sprays, **14, 37, 38, 39, 59, 60, 61, 81, 88, 96, 116, 119, 120, 128, 148, 150, 163, 196, 197. 243, 246, 289, 329, 330, 331, 367, 420, 421, 423, 442, 459, 503, 504, 534, 541, 544, 580, 632, 669, 677**; as plant dip, **293**; treatment of mushroom beds with, **384**; tests of systemic activity and other methods of application of, **45, 81, 116, 120, 141, 208, 293, 298, 342, 366, 495, 534, 592**; labelled with ^{32}P, **116, 357**; and DDT, **534**; and dieldrin, **330**; and heptachlor, **148**; and parathion, **196**; and oil emulsion, **150, 423**; properties of, and related compounds, **640**; oxygen analogue of (see O,O-Dimethyl S-Methylcarbamoylmethyl Phosphorothioate)

O,O-Di(2-methoxyethyl) S-Methylcarbamoylmethyl Phosphorothioate, toxicity of, as metabolite of dimethoate, **455**

3-(Dimethoxyphosphinyloxy)-N,N-dimethylcrotonamide (see Dimethyl 1-Dimethylcarbamoyl-1-propen-2-yl Phosphate)

O,O-Dimethyl Acetonylcarbamoylmethyl Phosphorodithioate, penetration of insect integument by, **495**

4-Dimethylamino-3,5-xylyl Methylcarbamate, against *Aphis gossypii*, **14**; diverse effects of, against Coccids, **96, 150**; against *Epitrix hirtipennis*, **153**; toxicity of, to *Eurytoma roddi*, **588**; against *Fenusa pusilla*, **16**; against Lepidoptera, **14, 87, 262, 308**; against thrips, **12**; against mites, **8, 11**; comparative toxicity of, to arthropods, **8**; toxicity of, to cotton, **87**; in dusts, **262**; in granules, **16**; in sprays, **12, 14, 87, 96, 150, 153**; tests of systemic action and other methods of application of, **8, 11, 16**; residual effect and stability of, **8**

O,O-Dimethyl S-p-Chlorobenzyl Phosphorodithioate, vapour toxicity of, to Coleoptera, **383**

O,O-Dimethyl O-4-Chloro-3-nitrophenyl Phosphorothioate, in sprays against *Eurygaster integriceps*, **35**

O,O-Dimethyl S-p-Chlorophenylthiomethyl Phosphorodithioate, against *Anthonomus grandis*, **86, 159, 497**; against *Carpophilus lugubris*, **85**; against *Heliothis zea*, **85**; in sprays, **85, 86, 497**; and DDT, **85**

Dimethyl 1,2-Dibromo-2,2-dichloroethyl Phosphate, against Coleoptera, **88, 98, 153**; against *Fenusa pusilla* and *Phytomyza ilicicola*, **76**; against Lepidoptera, **85, 88, 581**; ineffective against *Heliothis zea*, **87**; hatching of eggs of *Ostrinia nubilalis* inhibited by, **82**; against Mirids, **163**; toxicity of, to *Aphidius testaceipes*, **271**; against mites, **9, 453**; effects of, on germination of vetch, **98**; in baits, **271**; in dusts, **453**; in sprays, **76, 82, 85, 88, 98, 153, 163, 581**; applied from aircraft, **88**; and DDT, **82, 85**; with silica gel, **453**

Dimethyl 2,2-Dichloro-1-hydroxyvinylphosphonate, acetate of (see Substanz 215)

O,O-Dimethyl S-2,5-Dichlorophenylthiomethyl Phosphorodithioate (in sprays), against Coleoptera, **86, 89, 153**; against *Macrosiphum pisum*, **89**; against thrips, **12**; toxicity of, to cotton, **87**

O,O-Dimethyl S-3,4-Dichlorophenylthiomethyl Phosphorodithioate, in sprays against thrips, **12**

O,O-Dimethyl S-(1,2-Di(ethoxycarbonyl)-ethyl) Phosphorodithioate (see Malathion)

O,S-Dimethyl S-(1,2-Di(ethoxycarbonyl)-ethyl) Phosphorodithioate (see Isomalathion)

O,O-Dimethyl S-(1,2-Di(ethoxycarbonyl)-ethyl) Phosphorothioate (see Malaoxon)

Dimethyl 1-Dimethylcarbamoyl-1-propen-2-yl Phosphate, ineffective against *Fenusa pusilla*, **16**; against Hemiptera, **5, 14, 503**; against *Liriomyza pusilla*, **21**; against *Myzus persicae*, **21**; against *Platysenta sutor*, **21**; diverse effects of, on thrips, **11, 12, 13**; against *Tetranychus telarius*, **11**; anticholinesterase activity of, **355**; in sprays, **12, 13, 21, 503**; tests of systemic action and other methods of application of, **5, 11, 14, 16**; α isomer of, **355**; and DDT, **13**; and endrin, **12**

O,O-Dimethyl S-(α-Ethoxycarbonylbenzyl) Phosphorothioate, toxicity of, to Coleoptera, **382**

O,O-Dimethyl S-Ethylcarbamoylmethyl Phosphorodithioate, toxicity of, to *Tetranychus telarius*, **9**

O,O-Dimethyl S-2-(Ethylsulphinyl)ethyl Phosphorothioate, against aphids, **14, 61, 141, 186**; resistance to, in strains of *Therioaphis maculata*, **156**; against *Diaphania hyalinata*, **14**; against *Fenusa pusilla*, **16**; genetic basis of resistance to, in strains of *Tetranychus telarius*, **590**; use of, in testing susceptibility of *T. telarius* to acaricides, **83**; in granules, **16, 61**; in sprays, **14, 186**; tests of systemic activity of, **16, 141**

O,O-Dimethyl S-(2-Ethylsulphinyl-1-methyl)ethyl Phosphorothioate, in sprays against aphids, **428**
3,4-Dimethyl-8-hydroxyisocoumarin, **494**
O,O-Dimethyl S-Isobutylcarbamoylmethyl Phosphorodithioate, penetration of insect integument by, **495**
O,O-Dimethyl S-5-Methoxy-4-oxo-4H-pyran-2-ylmethyl Phosphorothioate (see Endothion)
O,O-Dimethyl S-2-(1-Methylcarbamoylethylthio)ethyl Phosphorothioate (Vamidothion), against *Capitophorus fragaefolii*, **586**; effects of, on populations of *Panonychus ulmi*, **290**; in sprays, **290, 586**
O,O-Dimethyl N-Methylcarbamoylmethyl Phosphorodithioate, penetration of insect integument by, **495**
O,O-Dimethyl S-Methylcarbamoylmethyl Phosphorodithioate (see Dimethoate)
O,S-Dimethyl S-Methylcarbamoylmethyl Phosphorodithioate (see Isodimethoate)
O,O-Dimethyl S-Methylcarbamoylmethyl Phosphorothioate, tests of systemic action of, against arthropods, **45, 46, 208**; mammalian toxicity of, **45**; anticholinesterase activity of, **495**; bioassay of residues of, **208**; as metabolite of dimethoate, **45, 358**
O,O-Dimethyl O-3-Methyl-4-methylsulphinylphenyl Phosphate, as metabolite of fenthion, **696**
O,O-Dimethyl O-3-Methyl-4-methylsulphinylphenyl Phosphorothioate, as metabolite of fenthion, **696**
O,O-Dimethyl O-3-Methyl-4-methylsulphonylphenyl Phosphate, as metabolite of fenthion, **696**
O,O-Dimethyl O-3-Methyl-4-methylsulphonylphenyl Phosphorothioate, as metabolite of fenthion, **696**
O,O-Dimethyl O-3-Methyl-4-methylthiophenyl Phosphorothioate (see Fenthion)
O,O-Dimethyl O-3-Methyl-4-nitrophenyl Phosphorothioate, against *Anthonomus grandis*, **86**; against Lepidoptera, **86, 263, 537**; in dusts, **263**; in sprays, **86**
O,O-Dimethyl Octylcarbamoylmethyl Phosphorodithtioate, penetration of insect integument by, **495**
3-(2-(3,5-Dimethyl-2-oxocyclohexyl)-2-hydroxyethyl)glutarimide (see Cycloheximide)
O,O-Dimethyl Phenylcarbamoylmethyl Phosphorodithioate, penetration of insect integument by, **495**
O,O-Dimethyl Phosphorothioic Acid, as metabolite of methyl-parathion, **617**
O,O-Dimethyl S-Phthalimidomethyl Phosphorodithioate (in sprays), against Coleoptera, **86, 89**; toxicity of, to *Eurytoma roddi*, **588**; against Lepidoptera, **14, 87**; against *Macrosiphum pisum*, **89**
Dimethyl 2,2,2-Trichloro-1-hydroxyethylphosphonate (see Trichlorphon)
O,O-Dimethyl O-2,4,5-Trichlorophenyl Phosphorothioate (see Fenchlorphos)
Dimetilan (see 3-Methyl-5-pyrazolyl Dimethylcarbamate)
dimidiatus, *Carpophilus*; *Phytocoris*; *Pteroptrix*
dimidiatus, auct., *Tyrophagus* (see *T. longior*)
Dimite (see DMC)
Dinarmus dacicidus (see *Cyrtoptyx*)
Dineb, in sprays against *Phyllocoptruta oleivora*, **308**
Dinex, tests and uses of, against Tetranychids, **450**; toxicity of, to fruit trees, **450**
Dinitro-sec.-butylphenyldimethyl Acrylate (see Acricid)
Dinitroisopropylphenol, toxicity of, to eggs of *Ceratitis capitata*, **424**
Dinitrophenol, in dormant spray against *Pseudococcus maritimus*, **150**
Dinocap, acaricidal action of, **208**
Dinoderus ocellaris, treatment of cut bamboos against, in India, **256**
Dinonyl Sodium Sulphosuccinate, as wetting agent with lime-sulphur, **170**
Dinoseb, effects of dormant sprays of, on beneficial arthropods, **65**
Dioctyl Sodium Sulphosuccinate, efficiency of, as wetting agent in sprays, **341**
Dioryctria, species of, on conifers in Canada and U.S.A., **84, 279, 577**; world distribution of, **541**; bionomics of, **84**; parasites of, **279**; sprays against, **85**
Dioryctria abietella, auct. (see *D. abietivorella*)
Dioryctria abietella (Schiff.), on conifers in Italy, **541, 542**; parasite of, **542**; type species of genus, **541**
Dioryctria abietivorella (on conifers), in Canada, **279, 602**; in U.S.A., **80, 84, 279, 566**; bionomics of, **84, 566**; predacious on *Pissodes terminalis*, **602**; parasite of, **279**; insecticides against, **80, 86**
Dioryctria cambiicola, **84**
Dioryctria mendacella (on pines), in Italy, **541**; in Spain, **679, 680**; parasite of, **542**
Dioryctria mutatella, on conifers in Italy, **541**
Dioryctria pineae, on pines in Italy, **541**

Dioryctria reniculella, bionomics of, on spruce in Quebec, **662**; disease and parasites of, **663**
Dioryctria reniculella pinicolella subsp. n., on pine in Guatemala, **431**
Dioryctria schuetzeella, question of occurrence of, in Italy, **541**
Dioryctria splendidella, considered a synonym of *D. sylvestrella*, **541**
Dioryctria sylvestrella, on pines in Italy, **541**; parasite of, **542**; *D. splendidella* considered a synonym of, **541**
Dioryctria zimmermanni (on conifers), in Canada, **279**; in U.S.A., **84, 279**; parasite of, **279**
2,3-p-Dioxane S,S-Bis(O,O-diethyl phosphorodithioate) (Dioxathion), against mites, **166, 424, 448**; resistance to, in strains of *Tetranychus telarius*, **691**; toxicity of, to insects, **424**; in sprays, **166, 448**
Diparopsis, factors affecting diapause in, **387**
Diparopsis castanea (on cotton), in Nyasaland, **228, 387**; in S. Rhodesia, **228**; factors affecting diapause in, **228, 387**; effects of flooding on, **228**
Diparopsis watersi (on cotton), in Aden, **227, 669**; in Chad, **205**; in Nigeria, **228**; in Sudan, **433, 627**; bionomics of, **627**; factors affecting diapause in, **228, 387**; water status of cotton in relation to infestation by, **669**; natural enemies of, **205**; effects of flooding on, **228**; sprays against, **627**
Diphenyl Sulphide, effects of soil treatment with, on emergence of *Magicicada septendecim*, **587**
Diphenyl Sulphone, factors affecting toxicity of, to eggs of *Tetranychus telarius*, **139**
Diplohoplizes armatus, destroying *Doliopygus dubius* in Ghana, **373**
Diplolepis rosae, parasite of, in Bulgaria, **322**
diplosidis, *Aprostocetus*
Diploxys fallax, insecticides against, on rice in Madagascar, **441**
Diprion hercyniae (see *Gilpinia*)
Diprion pini (on pines), in Austria, **474**; in Germany, **628**; bionomics of, in Yugoslavia, **53**; mortality factors of, **628**
Diprion similis, in Canada, **172**; on white pine in Wisconsin, **261**; sex attractant isolated from females of, **261**; parasites of, **172**; infection of, by nematode and associated bacterium, **577**
dipsacea, *Heliothis* (*Chloridea*)
Dipterex (see Trichlorphon)
dipterum, *Cloeon*
Dirhinus giffardii, introduced into Australia, **311**; in Hawaii, **311**; parasitising *Dacus*, **311**
dirhodum, *Macrosiphum* (*Metopolophium*)
discendens, *Psilosage*
Disodium Hydrogen Phosphate, use of, for labelling insects with ^{32}P, **523**
dispar, *Anisoplia*; *Lymantria* (*Ocneria*, *Porthetria*)
disparis, *Anastatus*
dissimilis, *Mamestra* (see *Hadena suasa*)
disstria, *Malacosoma*
Distantiella, insecticides against, on cacao in Ivory Coast, **440**
Distantiella theobroma, on cacao in W. Africa, **115, 116, 117, 462**; relation of, to die-back disease, **115**; measures against, **115, 117**; effects on Coccids and ants of endrin sprays against, **116**
distinguendus, *Lariophagus*
Distribution Maps, of pests, **212, 389**
Di-Syston (see O,O-Diethyl S-2-(Ethylthio)ethyl Phosphorodithioate)
Dithane (see Nabam)
Dithane Z-78 (see Zineb)
divaricata, *Coccinella septempunctata*
diversus, *Microcerotermes*
divisus, *Colpognathus*
DMC, toxicity of, to *Tetranychus* spp., **9, 42, 50, 366**; comparative toxicity of, to arthropods, **155**; effects of, on beneficial arthropods, **42**
DNA (see Deoxyribonucleic Acid)
DNC, against aphids, **187, 206, 547**; against Coccids, **103, 299, 426**; against *Nomadacris septemfasciata*, **540**; against Tineids, **296, 544**; against Tetranychids, **209, 289, 319**; effects of, on *Prospaltella perniciosi*, **426**; in sprays, **103, 206, 209, 296, 299, 319, 426, 540, 544, 547**; as dormant spray, **187, 289**; applied from aircraft, **540**; and oil emulsion, **206, 209, 289, 426, 544, 547**; (sodium salt), toxicity of, to eggs of Lepidoptera, **424**
DNOCHP (see Dinex)
Dociostaurus maroccanus, in Cyprus, **55**; in Persia, **175**; factors influencing outbreaks of, **175**; effects of crowding on development and morphology of, **54, 55**
Dodder (see *Cuscuta*)
Doddiana mellea (*triangulifera*), parasite of *Proceras sacchariphagus* in Java, **276**; attempted introduction of, into Mauritius, **277**
Dodecachlorooctahydro-1,3,4-metheno-2H-cyclobuta[cd]pentalene (see Mirex)
dodecella, *Exoteleia*
dodecellae, *Hemiteles*
Dodine (n-Dodecylguanidine Acetate), effects of, on populations of *Panonychus*

ulmi, **493**; effects on beneficial insects of sprays containing, **426**
Dog Foods, in diets for insects, **577**, **623**
Dogwood (see *Cornus stolonifera*)
dolabratus, *Miris* (*Leptoterna*)
Dolichomitus imperator (see *Ephialtes*)
Dolichos lablab, *Cosmopteryx phaeogaster* on, in India, **531**; Aleyrodids on, in Sudan, **105**; mosaic virus of, **650**
Dolichotetranychus australianus, on turf in S. Rhodesia, **125**
Dolichothrips varipes, sprays against, on *Cajanus* in Ceylon, **618**
Doliopygus, species of, infesting timber in Nigeria, **694**; colour preferences of adults of, **694**; traps for, **694**
Doliopygus brevis, infesting timber in Ghana, **538**
Doliopygus conradti (infesting timber), in Ghana, **375**, **376**, **378**, **538**; in Nigeria, **376**; bionomics and adult habits of, **376**; predator of, **378**
Doliopygus dubius (on forest trees), in Ghana, **373**, **378**, **538**; in Nigeria, **373**; bionomics and mortality factors of, **373**, **378**; synonymy of, **373**
Doliopygus malkini, infesting timber in Ghana, **378**
Dolycoris baccarum, damaging wheat in Greece, **321**
domestica, *Musca*
domesticus, *Acheta*; *Glycyphagus*
dominica, *Rhyzopertha*
Dominican Republic, *Lixophaga diatraeae* in, **25**
donisi, *Scolytoproctus*
Doralis fabae (see *Aphis*)
dorsale, *Praon*
dorsalis, *Dacus*
Dough, in diets for insects, **529**, **622**
Douglas Fir (see *Pseudotsuga menziesii*)
Dowfume W-85 (see Ethylene Dibromide)
Draeculacephala minerva, on lucerne, grasses and weeds in Arizona, **98**; transmitting virus disease of lucerne **98**
Dragonflies, predacious on *Heliothis zea*, **22**
Drepana harpagula, bionomics of, on fruit trees in Bulgaria, **190**
Dreyfusia (see *Chermes*)
Drino (see *Sturmia*)
Drosophila, in U.S.A., **162**, **369**, **570**; experiments with, as vector of oak wilt, **369**; contamination of fermenting wine by, **570**; infesting tomato fruits, **162**; population ecology of, **162**; tumours in, **295**; effects of radiation on, **525**
Drosophila affinis, **162**
Drosophila buscki, **162**, **570**
Drosophila hydei, **162**, **570**
Drosophila immigrans, **162**, **570**
Drosophila melanogaster, in U.S.A., **162**, **349**, **570**; infesting tomato fruits, **162**, **163**, **349**; transmitting *Geotrichum candidum*, **349**; tolerance of low temperatures by, **516**; apparatus for study of flight patterns in, **271**; methods of rearing and handling, **172**; effects of γ-radiation on, **491**, **692**; effects of apholate on reproductive tissues of, **692**; susceptibility or resistance to insecticides in strains of, **424**, **624**, **627**, **703**; metabolism of DDT in, **624**; used in tests and bioassay of insecticides, **37**, **39**, **83**, **108**, **155**, **208**, **304**, **369**, **370**, **556**, **640**, **683**
Drosophila pseudoobscura, **570**
Drosophila putrida, **162**
Drosophila quinaria, **162**
Drosophila robusta, **162**
Drosophila simulans, **570**
Drosophila tripunctata, **162**
Drugs, detection of mites infesting, **411**
Dryocoetes, characteristics and key to species of, in N. America, **488**
Dryocoetes autographus (*americanus*, *pseudotsugae*), on conifers in N. America, Asia and Europe, **488**; synonymy of, **488**
dubia, *Orgyia*
dubius, *Doliopygus*
ducharmei, *Eucordylea*
duodecimpunctata, auct., *Diabrotica* (see *D. undecimpunctata howardi*)
Dusts, for marking *Anthonomus grandis*, **167**; effects of, on production of webbing by *Tetranychus telarius*, **207**; applied from aircraft, **71**, **164**, **308**, **687**; carriers for, **46**, **106**; (inert), against Coleoptera in stored foodstuffs, **161**, **232**, **300**, **499**; effects of, on *Tetranychus* spp., **366**; mode of action of, **232**
Dyes, marking of bark-beetles with, **354**; use of, in determination of deposits of oil emulsions, **108**
Dylox (see Trichlorphon)
Dysaphis (see *Anuraphis*)
Dysdercus (on cotton), in Congo, **53**; in Sudan, **433**; effects of γ-radiation on, **525**
Dysdercus cingulatus, on cotton in India, **49**; toxicity of insecticides to, **49**, **50**, **231**
Dysdercus fasciatus, diffusion of oil films on integument of, **213**
Dysdercus koenigii, sprays against, in India, **674**
Dysdercus similis, on cotton in Ceylon, **618**
Dysmicoccus boninsis, on sugar-cane in Réunion, **514**

Dysmicoccus brevipes (on pineapple), **440**; in Ivory Coast, **524**; and pineapple wilt, **276**; ant associated with, **524**
Dysmicoccus neobrevipes, and pineapple wilt, **276**
Dytrol (see DNC)

E

Earias, on cotton in Madagascar, **112**; endrin against, **112**
E 605 (see Parathion)
Earias biplaga, in W. Africa, **116, 117, 118**; in Mozambique, **289**; on cacao, **116, 117, 118**; effects of temperature and humidity on development of stages of, **289**; relation of shade to infestation by, **117**; sprays against, **118**; effects on Coccids and ants of endrin sprays against, **116**
Earias cupreoviridis, bionomics of, on cotton in China, **391**
Earias fabia (on cotton), in Ceylon, **618**; in Formosa, **613**; phorate granules ineffective against, **613**
Earias insulana (on cotton), in Aden, **228**; in Egypt, **30, 34**; in Israel, **479**; in Morocco, **113**; in Sudan, **433**; factors affecting abundance of, **228**; insecticides against, **34, 113**
Earth, Diatomaceous (see Diatomaceous Earth)
Earthworms, in diet for mole-cricket, **625**
Earwigs, attracted to macerate of other earwigs, **165** (See also *Forficula auricularia*)
Earworm, Corn (see *Heliothis zea*)
Easter Lily (see *Lilium longiflorum*)
Echinochloa, question of migration of *Pachnephorus testaceipes* to, in Madagascar, **670**
Echinochloa colonum, unsuitable as foodplant for *Chloriona orizicola*, **152**
Echinochloa crusgalli, *Chloriona furcifera* on, in Japan, **315**; *Sesamia inferens* on, in Pakistan, **278**; destruction of, as measure against *Laodelphax striatella*, **391**
echinopus, *Rhizoglyphus*
Economic Entomology (see Entomology)
Ectomyelois ceratoniae, in stored products in Britain, **537**; larval characters of, **537**
Ectomyelois decolor, in stored products in America, **537**; larval characters of, **537**
Ectomyelois miriscis, in stored products in America, **537**; larval characters of, **537**
Ectropis (see *Boarmia*)
Ectypa glyphica, on lucerne in Bulgaria, **188**
Ecuador, *Ceramidia viridis* on banana in, **482**; *Alurnus humeralis* on oil palm in, **520**; forms of *Cadra cautella* on stored cacao in, **638**; beneficial insects in, **482, 520**
Edwardsiana rosae (see *Typhlocyba*)
Egg-plant (see *Solanum melongena*)
Eggs, residues of methoxy-DDT in, **9**; (dried), as source of infestation by *Ptinus tectus*, **633**
Egypt, *Melanagromyza phaseoli* on beans in, **29**; cotton pests in, **28, 29, 30, 31, 32, 33, 34**; pests of fruit trees in, **31, 32, 230**; pests of ornamental plants in, **32, 399**; *Prodenia litura* on other plants in, **30, 31**; pests of stored products in, **503, 699**; *Gibbium psylloides* in buildings in, **634**; natural enemies of pests in, **30, 32, 634**
E.I. 18706 (see O,O-Dimethyl S-Ethylcarbamoylmethyl Phosphorodithioate)
Ekatin (see Thiometon)
Ekatin-M (see Morphothion)
Ekatox 20 (see Parathion)
Elachertus, parasitising *Ceramidia butleri* in Costa Rica, **492**
Elachiptera cornuta (on cereals) in Germany, **434**; in Sweden, **560**; in U.S.S.R., **254, 255**
Elachiptera tuberculifera, on cereals in Sweden, **560**
elaeagni, *Capitophorus*
Elaeagnus angustifolia, *Aphis fabae* on, in Bulgaria, **324**
Elaeis guineensis, *Alurnus humeralis* on, in Ecuador, **520**; influence of, on infestation of cacao by *Xyleborus morstatti* in Nigeria, **119**; kernels of, as food for *Necrobia rufipes*, **121**
Elasmopalpus lignosellus, on groundnut in Brazil, **446**; outbreaks of, on sugarcane in West Indies, **648**; effects of burning trash on populations of, **648**
Elasmus albipennis, parasitising *Choreutis bjerkandrella* in France, **338**
Elasmus leucopterae, parasitising *Leucoptera coma*, in Congo, **668**
Elatobium abietinum (see *Rhopalosiphum*)
Electrical Installations, survey of damage by insects to, **234**
Electrical Radiation, against insects in timber, **51, 52**; effects of, on timber, **52**
Electrostatic Fields, effects of, on insects, **32, 239, 240, 294, 642**; inhibiting virus transmission by aphids, **574**
elegans, *Eupelmus*; *Oryctes*
elegantulus, *Cylas formicarius*
Elenchus, parasitising Delphacids in Madagascar, **513**
elephas, *Curculio* (*Balaninus*)

Elm, pests of, in Canada, **3, 507**; *Malacosoma neustria* on, in Holland, **50**; *Scolytus* spp. on, in Poland, **465**; pests of, in U.S.A., **5, 15, 368**; question of relation of *Magdalis* to *Ceratocystis ulmi* in, **368**; systemic treatments of, **5**
Elm, White, (see *Ulmus americana*)
Elm Leaf Beetle, Larger (see *Monocesta coryli*)
elutella, Ephestia
Elymodelphax excisa, new parasite of, in Finland, **516**
Elymus, species of, as food-plants of *Camnula pellucida*, **604**
embryophagum, Trichogramma
emissaria, Scopula
Emmalocera depressella, on sugar-cane in Pakistan, **277**
Empoasca abrupta, on lucerne in Arizona, **98**
Empoasca biguttula, phorate against, on cotton in Formosa, **612**
Empoasca decedens, insecticides against, on cotton in Egypt, **34**
Empoasca devastans, on cotton, **121**; extension of distribution of, **121**; characters of, **121**
Empoasca fabae, in Brazil, **446**; in U.S.A., **88, 148, 162, 305, 571, 697**; on groundnut, **446**; on lucerne, **88, 148, 162**; on potato, **305, 571, 697**; varietal susceptibility of potatoes to, **571**; on other species of *Solanum*, **305**; time of harvesting in relation to populations of, **162**; sprays against, **148, 697, 698**; method for counting eggs of, **305**; *E. kraemeri* misidentified as, **502**
Empoasca flavescens, on cotton in Aden, **228**; bionomics of, on vines in France, **548**
Empoasca kraemeri, insecticides against, on beans in Florida, **502**; misidentification of, **502**
Empoasca lybica, in Aden, **228**; in Morocco, **113**; in Sudan, **126**; on cotton, **113, 228**; experiments on transmission of broad bean virus by, **126**; factors affecting abundance of, **228**
Empoasca mali, E. kraemeri misidentified as, **502**
Empoasca pteridis, demeton spray against, on beet in Czechoslovakia, **623**
Empoasca terraereginae, on cotton in Queensland, **121**; characters of, **121**
Empusa (see *Entomophthora*)
EN 18133 (see O,O-Diethyl O-2-Pyrazinyl Phosphorothioate)
Enarmonia formosana, bionomics of, on fruit trees in Bulgaria, **415**; BHC spray against, **416**
Enarmonia griseana, on larch in Switzerland, **247, 248**; population study of, **247**
Encarsia formosa, parasitising *Trialeurodes vaporariorum* in Ontario, **505**
encyrtoides, Systasis
Encyrtus pulvinatus (see *Aphidencyrtus*)
Endasys subclavatus, parasitising *Neodiprion swainei* in Quebec, **597**; parasite of, **597**
Endive (see *Cichorium endivia*)
Endosulfan (see Thiodan)
Endothion, against aphids, **14, 141, 206, 298, 547**; diverse effects of, on Coccids, **423, 426**; against *Diaphania hyalinata*, **14**; against *Platyparea poeciloptera*, **59**; against *Tetranychus telarius*, **11**; effects of, on beneficial insects, **423, 426**; toxicity of, **467**; in sprays, **14, 59, 206, 298, 423, 426, 547**; tests of systemic activity of, **11, 141**; and sulphur, **426**
Endria inimica, in grassland in Canada and U.S.A., **651**; transmission of virus disease of cereals by, **651**
Endrin, effects of, on populations of ants, **116**; against aphids, **7, 262, 285, 390, 530, 619**; ineffective against *Aphis fabae*, **204**; diverse effects of, against Coccids, **5, 116, 441**; against Mirids, **7, 116, 117, 621**; tests and uses of, against other Hemiptera, **50, 148, 234, 391, 441, 526, 622**; against Coleoptera, **10, 18, 153, 380, 440, 441, 500, 514, 618**; susceptibility or resistance to, in strains of *Anthonomus grandis*, **86, 159, 160**; effects of sublethal doses of, on *Leptinotarsa*, **475**; against *Hylemya* spp., **281, 605**; against Trypetids, **111, 168**; against other Diptera, **132, 161, 211, 618**; against Noctuids, **81, 87, 112, 113, 116, 136, 165, 234, 414, 441, 454, 482, 514, 611, 618, 647, 677**; ineffective against *Diparopsis watersi*, **628**; susceptibility or resistance to, in strains of *Heliothis zea*, **579**; against Pyralids, **49, 86, 441, 442, 489, 501, 514, 527, 618, 655**; against other Lepidoptera, **84, 137, 266, 308, 390, 490, 514, 527, 529, 618, 677**; against grasshoppers and locusts, **148, 528, 621**; against thrips, **12, 285, 390, 618**; against mites, **304, 332, 395, 396, 670**; against cotton pests, **441**; effects of, on beneficial insects, **204, 668**; resistance to, in predacious mites, **491**; repellent action of, **161**; in dusts, **112, 262, 441, 475, 611**; evaluation of fillers for dusts of, **46**; in granules, **165, 501, 655**; in sprays, **5, 7, 12, 18, 49, 50, 81, 84, 86, 112, 113, 116, 132, 136, 137, 148, 153, 161, 165, 211, 234, 258, 266, 285, 304, 332, 390,**

391, 395, 440, 441, 442, 454, 482, 489, 490, 514, 526, 527, 529, 618, 619, 621, 628, 647, 670, 677; in bait-sprays, **111**; applied from aircraft, **49, 81**; soil treatment with, **168, 281, 380**; systemic activity of, **161**; persistence of, **489**; residues of, in plants, **281, 304, 454, 496**; tolerance of peach saplings to, **258**; hazards in use of, **441**; tolerance limit for, **281**; determination of, **46, 282, 304**; and DDT, **86, 112, 137, 441, 628**; and Shell SD-3562, **12**

enecator, *Trichomma*

Engelmann Spruce (see *Picea engelmanni*)

engelmanni, *Pissodes*

Enoclerus sphegeus, predacious on *Dendroctonus ponderosae* in British Columbia, **661**

Enoclerus undulatus, **662**

Enosima vectiferella (see *Maliarpha separatella*)

Entomology, bibliographies of, in Finland, **44**; rôle of, in crop production in New Zealand, **702**; annual review of, **177**; bibliography and symposium on use of radioisotopes in, **389**; references to, in annotated bibliography of agriculture, **292**; books on (see under Reviews)

Entomophthora aphidis, infesting *Myzus persicae* in India, **258**

Entomophthora coronata, pathogenicity of strains of, to *Galleria mellonella*, **702**

Entomophthora sphaerosperma, infesting *Psylla mali* in Nova Scotia, **509**; infesting *Hypera punctata* in U.S.A., **148**; effect of fungicides on, **509**

Enzyme Systems, rôle of, in damage to wheat by Pentatomids, **321**; interaction between insecticides and, **177, 298, 696** (See also Cholinesterases, DDT-dehydrochlorinase and Proteinase)

Eodiatraea centrella, on sugar-cane in Grenada, **279**; parasites of, **279, 280**

Eotetranychus carpini, sprays against, on vines in Italy, **678**

Eotetranychus carpini vitis, sprays against, on vines in Italy, **542**

Eotetranychus deflexus, **534**

Eotetranychus pruni (*pomi*), on fruit trees in Austria, **65, 473**; *Typhlodromus pyri* predacious on, **65**

Eotetranychus sexmaculatus, on *Citrus* in Florida, **22**; effects of cover crops on populations of, **22**

Ephedrus, parasitising *Macrosiphum pisum* in Czechoslovakia, **633**

Ephedrus pulchellus, parasitising aphids in Czechoslovakia, **480, 481**

Ephesia nymphaea, on *Quercus ilex* in Spain, **679**; virus disease of, **679**

Ephestia cautella (see *Cadra*)

Ephestia elutella (in stored products), **466**; in Britain, **537**; in Philippines, **288**; larval characters of, **537**

Ephestia kuehniella (see *Anagasta*)

Ephialtes, parasitising *Hydroecia micacea* in Germany, **280**

*Ephialtes buoliana*e, parasitising Lepidoptera, **568**; effects of host haemolymph on fecundity of, **568**

Ephialtes comstockii, parasitising *Rhyacionia buoliana* in U.S.A., **166**

Ephialtes extensor (see *E. punctulatus*)

Ephialtes imperator, parasitising *Monochamus* spp. in Maine, **603**

Ephialtes inquisitor, parasitising pupae of *Malacosoma neustria*, **72, 73**

Ephialtes ontario (see *Apechthis*)

Ephialtes pomorum, parasitising *Anthonomus* spp. in Bulgaria, **416, 556**

Ephialtes punctulatus, parasitising *Cydia pomonella* in Rumania, **319**

ephippella, *Argyresthia*

ephratae, *Nasutitermes*

Epicampoptera, insecticides against species of, on coffee in Central African Republic, **440**

Epichorista ionephela, on various plants in S. Africa, **112**; parasites of, **112**

Epicometis hirta (in Bulgaria), on fruit trees, **191, 322**; on leguminous crops, **191**; other food-plants of, **191**; bionomics of, **191**; insecticides against, **191**

epigaea, *Syngrapha*

Epilachna, species of, on vegetables in India, **531**; parasite of, **531**

Epilachna varivestis, on lima bean in Maryland, **453**; glycosides in relation to food-plant selection by, **575**; DDT-dehydrochlorinase in, **236**; seed treatment against, **453**; used in tests of insecticides, **7, 8, 521**

Epilampsis (see *Kratochviliana*)

Epinotia nigricana (see *Eucosma*)

Epiphyas postvittana, use of larvae of, in tests of insecticides, **138**

Epistrophe balteata (see *Syrphus*)

Epitrimerus pyri, sprays against, on pear in Poland, **185**

Epitrix cucumeris, sprays against, on potato in Maryland, **697**

Epitrix hirtipennis, insecticides against, on tobacco in Virginia, **152, 153**

Epiurus (see *Ephialtes*)

EPN, against *Aphis gossypii*, **619**; against *Migdolus morretesi*, **447**; against Lepidoptera, **90, 266, 578**; in dusts, **447**; in sprays, **90, 266, 578, 619**; persistence of deposits of, **90, 578**; bioassay of, **90**

Epuraea corticina, experiments with, as vector of oak wilt in Wisconsin, **369**
equestris, Merodon (*Lampetia*)
Eradex (see Quinoxaline-2,3-dithiocarbonate)
Erannis aurantiaria, bionomics of, on oak in Germany, **101**
Erannis defoliaria, bionomics and natural enemies of, on oak in Germany, **101, 102**; traps for, **102**
Erannis tiliaria, on sugar maple in Quebec, **404**; virus disease of, **404**
eremica, Dalpada
Eretmocerus serius, attacking *Aleurocanthus woglumi*, **125**; introduced into West Indies and Central America from Malaya, **125**
erichsonii, Laricobius; *Pristiphora*
eridania, Prodenia
Erigeron strigosus, Lygus lineolaris on, in New York, **487**
erinaceella, Depressaria
erinea, Aceria (*Eriophyes*)
Eriocampa ovata, bionomics of, in Canada, **31**; on *Alnus rugosa*, **3**; attacked by *Podisus*, **3**
Erioischia (see *Hylemya*)
Eriopeltis agropyri, on *Agropyrum* in U.S.S.R., **135**; *Coccophagus lycimnia* reproducing in, **135**
Eriophyes essigi (see *Aceria*)
Eriophyes phloeocoptes (see *Aceria*)
Eriophyes pyri, on fruit trees in Canada, **448, 505**; estimation of populations of, **506**; acaricides against, **448, 505**
Eriophyes tristriatus erineus (see *Aceria erinea*)
Eriophyes vitis, on vines in Israel, **296**; mite predacious on, **296**
Eriopis connexa, predacious on *Rachiplusia nu* in Argentina, **647**
Eriosoma lanigerum (on apple), in Britain, **63**; in Bulgaria, **187, 192**; in Holland, **689**; in Italy, **677**; in Japan, **226**; in S. Rhodesia, **120, 667**; varietal susceptibility of apples to, **339**; instar-distribution of, **438**; parasitised by *Aphelinus mali*, **120, 192, 226, 689**; insecticides against, **120, 187, 192, 227, 677**; sampling methods for, **689**
eriosoma, Plusia
Eripternimorpha javensis (see *Isotima*)
Eritrea, locusts in, **172, 176**; *Trioza erytreae* on *Citrus* in, **230**; parasite of *T. erytreae* in, **230**
Erizit (see Chlorobenzilate)
Ernobius punctulatus, on *Pinus radiata* in California, **306**; parasite of, **306**
eruditus, Cheyletus
ervi, Aphidius; *Bruchus*
Erwinia carotovora, Macronoctua onusta in relation to, infecting iris in U.S.S.R., **652**
erysimi, Rhopalosiphum (*Lipaphis*)
Erysit (see Chlorfenson)
Erythemis simplicicollis, predacious on *Heliothis zea* in Arkansas, **22**
Erythrina lithosperma, Xyleborus fornicatus on, in Ceylon, **619**
Erythrina variegata orientalis, Othreis fullonia on, in Samoa, **661**
Erythroneura simplex, auct. (see *Zygina rhamni*)
Erythroneura variabilis, on vines in California, **24**; insecticides against, **24**; resistance to insecticides in, **24**
erytreae, Trioza
essigi, Aceria (*Eriophyes*)
Estigmene acraea, on cotton in U.S.A., **504**; rôle of ascorbic acid in nutrition of, **504**; used in tests of insecticides, **154, 155**
Ethanolamine, in diet for *Anthonomus grandis*, **498**
Ethion, against aphids, **98, 424, 547**; against *Pseudaulacaspis pentagona*, **423**; against Coleoptera, **19, 424**; against *Hylemya* spp., **422, 605**; against other Diptera, **76, 77, 93, 424, 425**; against *Fenusa pusilla*, **76**; against Lepidoptera, **76, 424, 578**; hatching of eggs of *Ostrinia nubilalis* inhibited by, **82**; against *Phyllocoptruta oleivora*, **308, 371**; against Tetranychids, **9, 147, 166, 290, 424, 425, 543, 552**; resistance to, in strains of *Panonychus ulmi*, **656**; effects of, on beneficial arthropods, **2, 423**; residues of, on plants, **147, 424**; bioassay and determination of, **424, 460**; in dusts, **371, 422, 425**; in granules, **605**; in sprays, **2, 19, 76, 77, 147, 166, 290, 308, 422, 423, 543, 547, 552, 578**; applied from aircraft, **147**; factors affecting persistence of deposits of, **578**; in plant dips, **98**; seed treatment with, **422, 425, 605**; soil treatment with **422, 605**; and oil emulsion, **424**; and parathion, **422**; and Tedion, **2**
Ethiopia, control of *Schistocerca gregaria* in, **176**
Ethyl-DDD, effects of, on populations of *Hyaliodes harti*, **565**; against Lepidoptera, **45, 86, 577**; effects of, on mite populations, **565**; in sprays, **45, 565, 577**; factors affecting persistence of deposits of, **577**; and fungicides, **565**
O-Ethyl O-(p-Ethylsulphinylphenyl) Methylphosphonothioate, against *Anthonomus grandis*, **265**; of little value against *Heliothis zea*, **265**; toxicity of, to *Tetranychus cinnabarinus*,

265; toxicity of, to cotton, **265**; in sprays, **265**; systemic activity of, **265**
Ethyl S-Ethylthiomethyl Xanthate, vapour toxicity of, to Coleoptera, **383**
Ethyl Formate (as fumigant), against Coleoptera infesting stored grain, **13**; in mixtures with other fumigants, **13**
Ethyl-Gusathion (see Azinphos-ethyl)
O-Ethyl S-p-Methylphenyl Ethylphosphonodithioate, against *Conoderus vespertinus*, **260**; applied in transplanting water, **260**; soil treatment with, **260**
N,N′ - Ethylenebis(P,P - bis(1-aziridinyl) - N-methylphosphinic amide), tests of, as chemosterilant for *Panonychus citri*, **269**
Ethylene Bromochloride, against *Dacus dorsalis*, **490**
Ethylene Chlorobromide (as fumigant), against Trypetids, **89, 90, 500**; effects of, on avocados, **14**; residues of, in fruits, **500**
Ethylene Dibromide, soil treatment with, against insects, **9, 168**; alone or in fumigant mixtures against pests of stored products, **84, 89, 90, 490, 492, 500, 582**; factors affecting persistence and sorption of, **84, 149**; effects of, on foodstuffs, **14, 89, 149**; metabolism of, in papayas, **492**; residues of, **108, 347**; determination of, **108, 347**
Ethylene Dichloride, use of, alone or in fumigant mixture against *Phylloxera vitifoliae*, **253**; stimulation of vines by, **253**
Ethylene Glycol, cycloheximide applied in, **578**
Etiella zinckenella, distribution and host-plant range of, **44**; factors affecting development of, **236**
Eubadizon gracile, parasitising *Eucordylea ducharmei* in Quebec, **667**
Eubadizon rotundiceps, parasitic on *Magdalis* in Quebec, **4**
Eubolia (see *Tephrina*)
Eucalyptus, pests of, in Australia, **105, 389, 608, 609**; *Thyrinteina arnobia* on, in Brazil, **308**; *Phoracantha semipunctata* on, in Israel, **464**
Eucalyptus blakelyi, *Cardiaspina albitextura* on, in Australia, **608**
Eucalyptus calycogona, damaged by *Coptotermes brunneus* in W. Australia, **610**
Eucalyptus microcorys, resistance of timber of, to attack by *Nasutitermes exitiosus* in Australia, **110**
Eucalyptus obliqua, used in tests of susceptibility of timbers to *Lyctus brunneus*, **641, 642**
Eucarcelia rutilla, auct. (see *Carcelia obesa*)
Euchlaena mexicana, development of *Chilo zonellus* on, **258**
Eucirroedia pampina, on blueberry in New Brunswick, **569**
Eucordylea, keys to stages of species of, **595**
Eucordylea atrupictella, on *Picea glauca* in Canada, **595**; characters of, **595**
Eucordylea blastovora sp. n., on *Picea glauca* in Quebec, **595**; characters of, **595**
Eucordylea ducharmei sp. n., on spruce in Canada, **572, 595, 666**; bionomics and parasites of, **666, 667**; characters of, **595**
Eucordylea piceaella, on spruce in Canada and U.S.A., **595**
Eucosma nigricana, bionomics of, on fir in Czechoslovakia, **250**
Eugenia caryophyllata, *Chrysotypus caryophyllae* on, in Madagascar, **441**; systemic activity of insecticides in, **441**
Eulaema tropica, on mango in Mexico, **587**; ionone isomers as attractants for, **587**
Eulecanium cerasifex, on plum in Quebec, **448**
Eulecanium corni (on fruit trees), in New York and Ontario, **362**; in U.S.S.R., **135, 136**; in Yugoslavia, **54**; question of development of, on forest plants, **54**; bionomics of, **362**; parasites of, **135, 136**; insecticides against, **136, 362**
Eulecanium coryli (in Canada), on apple, **448**; on white elm, **507**; natural enemies of, **507**
Eulecanium kunoense, bionomics and parasite of, on fruit trees in California, **372**
Eulecanium rufulum, on oak in Yugoslavia, **54**; development of, on other trees, **54**; characters and synonymy of, **54**
Eulia pulchellana (see *Argyrotaenia*)
Eulimneria rufifemur (see *Campoplex*)
Eulophonotus myrmeleon, on cacao in W. Africa, **116, 378**; bionomics of, **378**; favoured by dieldrin, **116**
Eulophus, parasitising *Leucoptera coma* in Congo, **668**
Eulophus longulus (see *Pnigalio*)
Eumegastigmus pistaciae, on *Pistacia* spp. in Sicily, **198**; bionomics and parasite of, **198**; measures against, **198**
Eumerus, insecticides against species of, on onion in Finland, **108**; resistance to insecticides in strains of, **108**
Eumeta cervina, on cacao in Nigeria, **571**

Eumeta rougeoti, on cacao in W. Africa, **119, 571**; sprays ineffective against, **119**
euonymi, *Aphis*
Euonymus europaeus, *Aphis* spp. on, in Bulgaria, **321, 324**; distribution of *A. fabae* on, in relation to osmotic pressure, **251**
Euonymus japonicus, *Chrysomphalus bifasciculatus* on, in Japan, **225**
Euonymus verrucosus, *Aphis fabae* on, in Bulgaria, **324**
Euophryum confine, infesting timber in Britain, **173**
Eupelmus elegans, parasitising *Rhyacionia buoliana* in Argentina, **645**; as hyperparasite of *R. buoliana*, **646**
Eupelmus urozonus (parasitising *Dacus oleae*), in Corsica, **204**; in Italy, **197**; as hyperparasite, **204**
Euphorbia esula, as food-plant of *Macrosiphum euphorbiae*, **471**
euphorbiae, *Macrosiphum*
Euphorus pallipes, parasitising *Adelphocoris lineolatus* in Saskatchewan, **599**
euploeae, *Brachymeria*
Euproctis chrysorrhoea, in U.S.S.R., **134**; in Yugoslavia, **57**; on fruit trees, **57, 134**; on forest trees, **57**; aerosols against, **57, 134**
Euproctis howra, bionomics of, on coffee in India, **177**
Eupsilia transversa, on apple in Bulgaria, **417**
Eupterote fabia, on coffee in India, **404**; susceptibility of, to *Bacillus thuringiensis*, **404**
Eurema blanda silhetana, bionomics and parasites of, on shade trees in tea gardens in India, **528**; measures against, **529**
europaea, *Microphthalma*
European Corn Borer (see *Ostrinia nubilalis*)
European Red Mite (see *Panonychus ulmi*)
Eurygaster, distribution of species of, in Middle East, **313**
Eurygaster austriaca (on wheat), in Greece **321**; distribution of, in Middle East, **314**; in U.S.S.R., **182**; parasite of, **182**
Eurygaster integriceps (on cereals), in Middle East, **35, 127, 313, 314, 438, 519**; in U.S.S.R., **182, 313**; feeding habits of, **525**; ecology and population dynamics of, **519**; method of estimating populations of, **438**; virulence of entomogenous fungi to, **522**; natural enemies of, **127, 182**; other factors affecting populations of, **182**; tests and uses of insecticides against, **35**; method of rearing, **127**; labelled with ^{182}Ta, **525**
Eurygaster maura (on cereals), in Mediterranean basin, **314, 321**; in Middle East, **313**; in Rumania, **314**; in U.S.S.R., **182**
Eurygaster testudinaria, distribution of, in Middle East, **314**
eurytheme, *Colias*
Eurytoma onobrychidis, on sainfoin in Bulgaria, **478**; measures against, **478**
Eurytoma pini, parasitising *Rhyacionia buoliana* in U.S.A., **166**
Eurytoma roddi (on lucerne in U.S.A.), susceptibility of lucerne varieties to, **165**; bionomics of, **274, 275**; effects of temperature on development of, **275**; honey in diet for, **274, 275**; toxicity of insecticides to, **588**
Eurytoma rosae (parasitising *Dacus oleae*), in Corsica, **204**; in Italy, **197, 329**
Eurytoma suecica, on wheat in Sweden, **561**
Euscelis lineolata, diapause in, in Germany, **203**; transmitting plant viruses, **203**
Euscelis plebeja, in Britain, **536**; in Czechoslovakia, **69**; in Germany, **203**; diapause in, **203**; grassland in relation to, **69**; transmitting virus diseases of plants, **69, 203, 536**
Euscepes postfasciatus, on sweet potato in Fiji, **121**; dieldrin spray against, **121**
Euschistus servus, bionomics of, on vegetables and other plants in Arkansas, **273, 274**; parasites of, **274**
Eutelia adulatrix, on pistachio in Turkmenia, **40**
Eutetranychus banksi, on *Citrus* in Florida, **22, 371, 372**; predator of, **372**; acaricides against, **371**
Eutheresia monohammi, attacking larvae of *Monochamus* spp. in Maine, **603**
Eutogenes frater, predacious on eggs of *Tetranychus cinnabarinus* in Egypt, **32**
Eutricharaea rotundata (see *Megachile*)
Euxesta notata, in Canada, **93**; susceptibility or resistance to insecticides in strains of, **93**
Euxoa exclamationis (see *Agrotis*)
Euxoa messoria, in Ontario, **93**; resistance to insecticides in strains of, **93**
Euxoa ochrogaster, influence of haemolymph of, on parasite fecundity, **568**
Evagora milleri, on lodgepole pine in California, **10**; sampling system for, **10**
Evetria (see *Rhyacionia*)
evolans, *Carcelia*
examinator, *Pimpla* (see *P. turionellae*)
exaptus, *Systates*
excisa, *Elymodelphax* (*Calligypona*)

exclamationis, Agrotis (*Euxoa*)
Exephanes occupator, parasitising *Hydroecia micacea* in Germany, **280**; question of introduction of, into Canada, **280**
Exeristes comstockii (see *Ephialtes*)
exigua, Campogaster; *Spodoptera* (*Laphygma*); *Susumia*
exitiosa, Aegeria (*Sanninoidea*)
exitiosus, Nasutitermes
Exochomus, destroying nymphs of *Ceroplastes sinensis* in Sicily, **198**
Exoteleia dodecella, parasites of, on pines in Czechoslovakia, **68, 251, 333, 399**; hyperparasite of, **68**
extensor, Ephialtes (see *E. punctulatus*)
externa, Fiorinia
externus, Acarapis
Eyprepocnemis roseus, bionomics of, on cereals and other plants in India, **203**

F

fabae, Aphis (*Doralis*); *Empoasca*
fabia, Earias; *Eupterote*
Fac 20 (see O,O-Diethyl S-Isopropylcarbamoylmethyl Phosphorodithioate)
fagi, Cryptococcus
Fagus (see Beech)
falcifer, Rhizoecus
Falco (Falcon), insecticide residues in tissues and eggs of, **642**
fallacis, Typhlodromus
fallax, Diploxys
falli, Conoderus
farinae, Tyroglyphus (see *Acarus siro*)
farris, Acarus
fasciata, Phymata; *Prospaltella*
fasciatum, Trichogramma
fasciatus, Conocephalus; *Coraebus*; *Dysdercus*; *Glischrochilus*; *Oncopeltus*
fasciculatus, Araecerus
fascifrons, Macrosteles
fatigans, Culex pipiens
fausta, Rhagoletis
Felt, texture of, in relation to hatching of *Attagenus megatoma*, **626**
femorata, Tiphia
femurrubrum, Melanoplus
Fenchlorphos, against *Aphis gossypii*, **14**; against *Diaphania hyalinata*, **14**; against Coleoptera, **11, 88**; tests of toxicity of, to other insects, **8, 521**; in sprays, **14, 88**; used against pests of stored sorghum, **11**
fenestralis, Nythobia (*Horogenes*)
Fennel (see *Foeniculum vulgare*)
fennica, Actebia
Fenson, toxicity of, to insects, **424**; in sprays against Tetranychids, **42, 199, 209, 297, 424, 433, 450, 543, 691**; susceptibility or resistance to, in strains of Tetranychids, **50, 208**; effects of, on beneficial arthropods, **42**; and other acaricides, **199, 543**
Fenthion, against aphids, **14, 390**; against other Hemiptera, **35, 117, 307**; against *Contarinia oregonensis*, **367**; against Trypetids, **185, 435, 446, 682**; against *Epitrix hirtipennis*, **153**; against Lepidoptera, **14, 85, 185, 390, 527, 537, 628, 669**; against thrips, **12, 390**; in sprays, **12, 14, 35, 85, 117, 153, 185, 307, 367, 390, 435, 446, 527, 628, 669, 682**; applied from aircraft, **682**; residues of, on plants and plant products, **307, 682, 703**; systemic action and metabolism of, in beans, **696**; labelled with ^{32}P, **696**; and DDT, **85**
Fenusa pusilla, insecticides against, on birch in Connecticut, **16, 76**
Feralia jacosa, strains of *Bacillus thuringiensis* isolated from, **659**
Ferbam, in spray mixtures against apple pests, **227, 493, 565**; effects of, on parasite of *Galleria mellonella*, **104**; in Niacide A (*q.v.*), **493**
Feronia melanaria, on strawberry in England, **380**; in peach orchard in Ontario, **664**; insecticides against, **380, 664**
Ferric Benzothiazylmercaptide, in Niacide A (*q.v.*), **493**
Ferrisia (*Ferrisiana*) *virgata*, transmitting swollen-shoot virus of cacao in W. Africa, **116, 118**; food-plant range of, in India, **529**; on jute in E. Pakistan, **623**; necrosis virus of cacao not transmitted by, **118**; ants associated with, **116**; effects of sprays on populations of, **116**
Ferrous Sulphate, influence of, on diapause in *Leptinotarsa decemlineata*, **644**
ferruginea, Costalimaita; *Crepidodera*
ferrugineus, Cryptolestes; *Xyleborus*
ferus, Nabis
Festuca ovina, use of, in rearing larvae of Noctuids, **185**
Festuca rubra, as food-plant of *Camnula pellucida*, **604**; feeding habits of *Miris dolabratus* on, **335**
ficus, Chrysomphalus
Fig, *Bostrychopsis jesuita* on, in S. Australia, **461**; *Azochis gripusalis* on, in Brazil, **308**; *Batocera rufomaculata* on, in Israel, **464**
figulilella, Cadra
Fiji, *Nacoleia octasema* on banana in, **671**; *Susumia exigua* on rice in, **270**; pests of sweet potato in, **121**; Cerambycids infesting timber in, **444**; *Aspidiotus destructor* in, **58**; beneficial

insects in, **58, 121**; question of introduction of parasites of *N. octasema* into, **671**
fijiensis, Ceraphron
Filatima, species of, on bitterbrush in Idaho, **580**
Filbertworm (see *Cydia latiferreana*)
Filters, preventing mite access to mushroom-spawn cultures, **453**
Finland, *Panonychus ulmi* on apple in, **297**; pests of cereals in, **63, 64, 107, 108, 459, 470**; virus diseases of cereals in, **63, 64, 291, 471**; pests of grasses in, **63, 108**; pests of clovers in, **469, 641**; forest pests in, **463, 470**; Diptera on onion in, **108**; *Cydia nigricana* on peas and vetch in, **64**; natural enemies of pests in, **297, 463, 470, 471, 516**; approval and use of pest-control materials in, **41**; bibliographies of entomology in, **44**
finlandicus, Typhlodromus
Fiorinia externa, sprays against, on *Tsuga canadensis* in New York, **96**
Fiorinia theae, bionomics and ecology of, on tea in India, **620**; natural enemies of, **620**; fungus infesting, **620**; sprays against, **620**
Fir (see *Abies*)
Fir, Balsam (see *Abies balsamea*)
Fir, Douglas (see *Pseudotsuga menziesii*)
Fir, Fraser (see *Abies fraseri*)
Fir, Grand (see *Abies grandis*)
Fir, Pacific Silver (see *Abies amabilis*)
Fir, Siberian (see *Abies sibirica*)
Fir, Subalpine (see *Abies lasiocarpa*)
Fire, as measure against *Analeptes trifasciata*, **375**
fiscellaria, Lambdina
Fish, toxicity of insecticides to, **592**; absorption of DDT by, **400**; in diets for Coleoptera, **414, 606**; (boxed), treatment of, with pyrethrins against blowflies, **231**
Fish, Dried, *Ptinus tectus* infesting, **701**
Fish Food, *Acheta domesticus* reared on, **577**
Fish Meal, blowflies infesting fish for, **231**; in diets for insects, **123, 379**
Fish Oil, in baits: for ants, **493**; for earwigs, **165**
fisheri, Aphytis
fitchii, auct., *Rhopalosiphum* (see *R. padi*)
Fitofos (see Parathion)
flava, Cosmophila (*Anomis*); *Hoplocampa*
flavescens, Empoasca; *Sitona*
flavicauda, Polyblastus (*Scopiorus*)
flavicollis, Kalotermes (*Calotermes*)
flavilatera, Aeneolamia
flavipes, Anthrenus; *Apanteles*; *Foersterella*; *Reticulitermes*
Flavobacterium, in *Pseudaletia unipuncta*, **402**
flavoorbitalis, Cremastus (*Trathala*)
flavopalliatus, Thysanus
flavopicta, Tomaspis
Flax, *Rachiplusia nu* on, in Argentina, **646**; Thysanoptera on, in Holland, **291**; infected by virus of oats, **651**; (stored), sorption of methyl bromide by, **85**
Flax-seed Meal, hydrolysate of, as attractant for *Ceratitis capitata*, **646**
fletcheri, Bracon; *Opius*
Flibol-E (see Trichlorphon)
Flitguns, **229**
Floods, effects of: on insect populations, **144, 442, 609**; on diapause in *Diaparopsis*, **228, 229**; on stages of *Lymantria dispar*, **465**
floralis, Hylemya; *Plagionotus*
Florida, *Citrus* pests in, **22, 99, 176, 272, 569, 570**; tristeza virus of *Citrus* in, **176**; pests of other fruit trees in, **21, 272**; *Antonina graminis* on grasses in, **272**; *Myzus persicae* on tobacco in, **262**; pests of vegetables in, **21, 80, 502**; *Dioryctria abietivorella* on pines in, **566**; pests of ornamental and other plants in, **272**; reappearance of *Ceratitis capitata* in, **126**; *Pseudaonidia clavigera* in, **126, 272**; *Aculus pelekassi* in, **126**; data on insects likely to occur in, **272**; beneficial insects in, **272, 569, 570**; fungus infesting *Lepidosaphes beckii* in, **570**
floridensis, Trialeurodes
florum, Opomyza
Flour, Coleoptera in, **503, 673, 694**; *Tribolium castaneum* reared on, **501**; Lepidoptera in, **481, 637, 673**; treatment of, against pests, **503, 673, 674**; sorption of ethylene dibromide by, **149**; residues of insecticides in, **93, 637**; question of treating, with *Bacillus thuringiensis*, **481, 674**
Flour Mills, *Cryptolestes turcicus* in, **126**; climate and infestation of, **466**
Fluon (see Polytetrafluoroethylene)
Fluorescent Dyes, marking of Coleoptera with, **167, 354**
Fluoroacetamide, against *Cecidophyopsis ribis*, **342**; treatment of mushroom beds with, against *Heteropeza pygmaea*, **384**; toxicity of, to mushrooms, **384**; systemic action of, **342**
Fluorometry, in determination of insecticide residues, **241**
o-, m- and p-Fluorophenyl Methylcarbamate, anticholinesterase activity of, **154**
fockeui, Aculus (*Vasates*)

Foeniculum vulgare, *Systole albipennis* on, in India, **257**
Foersterella flavipes, parasitising *Cassida deflorata* in France, **339**
Folidol and Folidol E 605 (see Parathion)
Folidol-Öl, containing parathion (*q.v.*), **395**
Folpet (see N-Trichloromethylthiophthalimide)
Fonithion and Fonition (see Parathion)
Foodstuffs, key to Coleoptera infesting, **572**; analysis of insecticide residues in, **208** (See also individual foodstuffs)
forbesi, *Cerosipha*
Forcipomyia, pollination of cacao by, in Congo, **229**; predacious on *Monochamus* spp. in Maine, **603**
Forcipomyia ciliata, factors affecting infestation of turnips by, in Germany, **683**
Forest Pests, in W. Africa, **346, 373–378, 537**; in Argentina, **645, 646**; in Australia, **105, 106, 389**; in Austria, **133, 293, 394, 432, 473, 684**; in Brazil, **308**; in Britain, **52, 230, 385, 464**; in Bulgaria, **190, 465**; in Canada, **3, 4, 9, 24, 109, 143, 144, 145, 146, 147, 172, 213, 215, 216, 217, 220, 221, 223, 224, 270, 279, 283, 284, 346, 401, 405, 447, 449, 450, 456, 488, 506, 507, 508, 509, 516, 563, 565, 566, 567, 568, 569, 572, 576, 592, 593, 594, 595, 596, 597, 598, 599, 601, 603, 659, 661, 662, 663, 666, 667, 702**; in Congo, **120, 376**; in Czechoslovakia, **68, 69, 70, 107, 250, 251, 252, 332, 333, 399, 465, 480**; in Finland, **463, 470**; in France, **131, 205, 206, 422, 546, 549, 550, 680**; in Germany, **101, 102, 103, 242, 243, 334, 335, 337, 396, 428, 429, 432, 463, 464, 628, 629**; in Guatemala, **431**; in Holland, **50, 106, 241**; in India, **44, 459, 498**; in Israel, **464**; in Italy, **37, 196, 541, 542**; in Japan, **103, 412, 413**; in Java, **638**; in Kenya, **400**; in Lichtenstein, **432**; in Mexico, **576**; in Mongolia, **254, 255**; in Netherlands New Guinea, **517**; in New Zealand, **444, 465**; in Norway, **637**; in Pakistan, **623**; in Persia, **128**; in Poland, **70, 464, 465**; in Portugal, **464**; in Rwanda and Burundi, **120**; in Spain, **678, 679, 680**; in Sweden, **41, 470, 628**; in Switzerland, **247, 248**; in Turkey, **430**; in U.S.S.R., **70, 71, 72, 73, 74, 75, 183, 254, 255, 256, 458, 643**; in U.S.A., **4, 5, 10, 12, 14, 15, 16, 24, 25, 76, 77, 80, 84, 87, 97, 147, 154, 166, 168, 215, 219, 223, 261, 270, 279, 306, 346, 354, 367, 368, 369, 450, 452, 456, 459, 464, 488, 490, 492, 506, 507, 509, 516, 564, 566, 569, 572, 576, 577, 581, 595, 603, 639, 665, 702**; in Yugoslavia, **36, 53, 54, 55, 56, 57, 193, 194, 235, 249, 325, 326, 327, 328, 463, 465**; smoke damage to trees in relation to, **70**; effects on timber increment of defoliation by, **464**; delaying bud development as measure against, **300**; theories of dynamics of populations of, **236**; forecasting effects of, after drought, **465**; review of symbiosis between fungi and, **177**; forest management in relation to, **457**; sampling method for, **385**; bibliography on radioisotopes in relation to dispersal of, **389**; books on, **346**
Forficula auricularia, in houses and gardens in Utah, **165, 261**; baits and traps for, **165**; insecticides against, **261**
Formaldehyde, experiments on transmission of viruses by aphids treated with, **79**; treatment of stored fish with, **231**; against *Aspergillus* in artificial diets for *Pectinophora gossypiella*, **150**; as synergist with imidazole, **259**; and methyl paraben, **151**
Formica, behaviour and paper chromatography in relation to systematics of, **348**
Formica aquilonia, in Switzerland, **247**
Formica cordieri, in Switzerland, **247**
Formica fusca, predacious on *Cydia pomonella* in Rumania, **319**
Formica fusca glebaria, predacious on *Sesamia cretica* in Yugoslavia, **394**
Formica lugubris, in Switzerland, **247**
Formica nigricans, in Switzerland, **247**
Formica polyctena, in Switzerland, **247**; destroying noxious insects, **247**
Formica rufa, in Switzerland, **247**
formicarius, *Cylas*
Formosa, pests of *Citrus* in, **611, 612**; tristeza disease of *Citrus* in, **612**; cotton pests in, **612, 613**; *Acrocercops cramerella* on litchi in, **525**; *Scirpophaga nivella* on sugar-cane in, **572**; pests of vegetables in, **161, 611**; *Aphytis lepidosaphes* in, **78**
formosa, *Achrysocharella*; *Encarsia*
formosana, *Enarmonia*
formosanus, *Ootetrastichus*; *Opius*
fornicata, *Phytodecta*
fornicatus, *Xyleborus*
Forstvitonöl, containing BHC (*q.v.*), **432**
Foschlor R-20 (see Trichlorphon)
Fosferno (see Parathion)
foveicollis, *Aulacophora*
foveolatus, *Pedicbius*
Fowls, Coccid indirectly favoured by, in orchards, **182**; residues of methoxy-DDT in eggs and tissues of, **8, 9**

fragaefolii, Capitophorus (*Passerinia, Pentatrichopus*)
Fragaria chiloensis, Capitophorus spp. on, in California, **352**
fragariae, Steneotarsonemus
France, maize pests in, **243, 244, 245, 290**; *Oscinella frit* on other cereals in, **425**; *Contarinia medicaginis* on lucerne in, **550**; orchard pests in, **59, 130, 246, 290, 296, 298, 423, 424, 426, 546, 552**; pests of chestnut in, **548**; *Aulacaspis rosae* on raspberry in, **130**; pests of vines in, **290, 298, 300, 548, 635, 681**; virus diseases of vines in, **548, 635**; Coleoptera on rape in, **682**; pests of vegetables in, **59, 298, 338, 422, 458, 547, 636**; forest pests in, **59, 131, 205, 206, 422, 546, 680, 701**; pests of lavender in, **246, 515**; pests of ornamental plants in, **246, 247, 298**; other insects in, **58, 408, 550, 552**; *Bacillus thuringiensis* isolated from *Bombyx mori* in, **129**; other diseases of insects in, **205, 547, 549**; natural enemies of pests in, **130, 131, 194, 296, 338, 339, 423, 426, 515, 550**; review on use of Coccinellids in biological control of pests in, **58**; work on pests of cultivated plants, stored products and timber in, **422**; use of radioisotopes in entomology in, **525**; list of names of insecticides used in, **422**
Frangula alnus (see *Rhamnus frangula*)
frangulae, Aphis
Frankliniella fusca, sprays against, on cotton in Mississippi, **12, 13**
Frankliniella helianthi and *moultoni* (see *F. occidentalis*)
Frankliniella occidentalis (in U.S.A.), on bitterbrush, **580**; on safflower, **658**; colour forms of, as vectors of tomato spotted wilt virus, **20**; insecticides against, **658**; synonymy of, **20**
Frankliniella tritici, on chrysanthemum, **11**; systemic insecticides against, **11**
fransseni, Bactromyia
Fraser Fir (see *Abies fraseri*)
frater, Eutogenes; *Opatroides*
Fraxinus chinensis, resistance of timber of, to attack by termites in China, **100**
freemani, Nepytia
frit, Oscinella (*Oscinosoma*)
Frit Fly (see *Oscinella frit*)
frontalis, Magdalis; *Phonapate*
frontella, Agromyza
frugiperda, Spodoptera (*Laphygma*)
Fruit-tree Leaf-roller (see *Archips argyrospilus*)
Fruit-tree Red Spider Mite (see *Panonychus ulmi*)
fugax, Hylemya (*Phorbia*); *Solenopsis*
Fulgora pellucida (see *Javesella*)
fuliginosa, Phragmatobia
fuliginosum, Gymnosoma
fuliginosus, Dahlbominus; *Stenocarus*
fullo, Otiorhynchus
fullonia, Othreis
Fulmekiella ovata, parasitising *Cassida deflorata* in France, **339**
Fulmekiola serrata, on sugar-cane in Madagascar, **514**
Fumarin, effects of, on *Tribolium confusum* in baits for rodents, **21**
fumiferana, Choristoneura
fumiferanae, Apanteles; *Glypta*
Fumigants, reviews of uses of, **240**; manual on application of, **346**; plastics in relation to use of, **668**
funebrana, Cydia (*Laspeyresia*)
funesta, Oxythyrea
Fungi, filtrates of, in experiments against *Anthonomus grandis*, **363**; relation of Scolytids to, **373, 376, 660**; effects of, as contaminants in artificial diets for *Pectinophora gossypiella*, **150**; fungicides against, **150**; survey of data on effects of insecticides on, in soil, **686** (See also *Streptomyces*)
Fungi, Entomogenous, infesting aphids, **92, 258, 518**; infesting other Hemiptera, **509, 522, 570, 620**; infesting Coleoptera, **58, 148, 351, 404, 435, 482, 603, 609**; infesting Lepidoptera, **135, 194, 221, 226, 234, 270, 319, 333, 394, 522, 614, 618, 659, 702**; infesting sawflies, **5, 683**; infesting *Schistocerca pallens*, **296**; infesting termites, **406**; physiopathology of infestation by, **295**; effects of γ-radiation and other physical factors on virulence of, **522**; other factors affecting use of, **177, 393, 509**; large-scale culture of, **613**; field use of, **613**
Fungi, Injurious, relation of insects to, **4, 114, 115, 177, 206, 255, 285, 345, 349, 351, 368, 369, 420, 447, 466, 471, 517, 648, 689**; termites attracted to timber infested by, **494**; confusion of damage by sawfly and, on larch, **144**; relation of mites to, **147, 617**; book on relation of arthropods to transmission of, **276**; effects of, in diet of *Necrobia rufipes*, **121**; smoke damage to trees in relation to, **70**; effects on, of measures against pests, **345**; in baits for rodents, **21** (See also Sooty Mould)
Fungi, Saprophytic, effects of, on insects, **547**
Fungus, Yellow Muscardine (see *Isaria farinosa*)
Funnels, used in sampling populations in orchards, **689, 690**
fur, Ptinus

furcellata, Cantheconidea (*Canthecona*)
furcifera, Sogatella (*Chloriona, Sogata*)
furcula, Aelia
Furniture, insects infesting, **171, 643**
Fusarium, infesting *Fiorinia theae* in India, **620**; associated with *Xyleborus destruens* in teak in Java, **517**; relation of *Elachiptera cornuta* to infection of maize by, in U.S.S.R., **255**; as precursor of infestation of bulbs by mite, **617**
fusca, Formica; *Frankliniella*
fuscatus, Xyleborus (see *X. ferrugineus*)
fuscilabris, Ceratomegilla (*Megilla*)
fuscipennis, Dahlbominus (see *D. fuliginosus*)
fuscocupreana, Ptycholoma (*Cacoecia*)
fuscodorsanus, Henricus

G

G-30494 (see O,O-Dimethyl S-2,5-Dichlorophenylthiomethyl Phosphorodithioate)
Galinsoga parviflora, Thrips nigropilosus on, **436**
Galleria mellonella, bionomics of, damaging honey-combs in U.S.A., **588, 589, 654**; pathogenicity of strains of *Entomophthora coronata* to, **702**; influence of haemolymph of, on parasite fecundity, **568**; measures against, **589**; in diet for mole-cricket, **625**; use of, in tests of agricultural chemicals, **103**
Gambroides (see *Isotima*)
gamma, Autographa (*Phytometra, Plusia*)
Gammarus lacustris, use of, for detection of chlorinated hydrocarbons, **282**
Garden Webworm (see *Loxostege similalis*)
Garlic (Stored), infested by insects, **288**; treatments of, **288**
Garlic Fly (see *Suillia lurida*)
Garry Oak (see *Quercus garryana*)
Gas Chromatography, purification of sex attractant of *Diprion similis* by, **261**; of insecticide residues, **208, 240, 241, 454, 460, 496, 516, 521**
Gasterocercus depressirostris, bionomics of, on oak in U.S.S.R., **73**
GC-1283 (see Mirex)
GC-4072 (see Diethyl 1-(2,4-Dichlorophenyl)-2-chlorovinyl Phosphate)
Geigy 30493 (see O,O-Dimethyl S-3,4-Dichlorophenylthiomethyl Phosphorodithioate)
Geigy 30494 (see O,O-Dimethyl S-2,5-Dichlorophenylthiomethyl Phosphorodithioate)
Gelatin, infectivity of pathogen of *Panonychus citri* prolonged by, **692**
Gelechia pistaciae, on pistachio in Turkmenia, **40**
Gelis, parasitising *Hypera variabilis* in New York, **586**
Gelis tenellus, as parasite and hyperparasite of *Rhyacionia buoliana* in Argentina, **645, 646**
geminata, Solenopsis
gemma, Kratochviliana (*Epilampsis*)
gemmatalis, Anticarsia
General Chemicals 3583 (see Diethyl 1-(2,5-Dichlorophenyl)-2-chlorovinyl Phosphate)
General Chemicals 4072 (see Diethyl 1-(2,4-Dichlorophenyl)-2-chlorovinyl Phosphate)
geniculata, Systole
geniculatum, Copidosoma
genitalis, Hylemya (*Phorbia*)
Genite, against Tetranychids, **196**; ineffective against *Eutetranychus banksi*, **371**
gentneri, Dasyneura
Geococcus citrinus, on *Piper betle* in India, **640**
Geococcus coffeae, on sweet potato in India, **640**
Geocoris, predacious on *Colias eurytheme* in California, **497**; toxicity of sprays to, **497**
Georgia, *Anthonomus grandis* on cotton in, **159**; *Pyroderces rileyi* on maize in, **84**; Cicadellid vectors of phony peach disease in, **17, 350**; pests of greenhouse plants in, **503**; insecticide residues in groundnuts in, **160**
Geotrichum candidum, transmission of, by insects in California, **349**
Geranium (see *Pelargonium*)
germanica, Blattella
germanicus, Rhynchites
Germany, pests of beet in, **132, 204, 241, 242, 356, 428, 429, 623**; yellows virus of beet in, **241, 242, 428**; *Psila rosae* on carrot in, **556**; pests of crucifers in, **132, 201, 202, 334, 335, 356, 428, 471, 557, 625, 683, 684, 687, 701**; relation of insects to rot of brussels sprouts in, **471**; aphids on leguminous vegetables in, **356, 427**; *Myzus ascalonicus* on onion in, **433**; potato pests in, **356, 387, 685**; *Aphis frangulae* transmitting virus disease of potato in **395**; pests of cereals in, **202, 292, 433, 434, 557, 685, 686**; pests of grasses in, **335, 686**; apple pests in, **338, 557, 624, 628, 684, 690**; arthropod fauna of apple trees in, **689, 690**; *Rhagoletis cerasi* on cherry in, **132, 300, 682**; strawberry pests in, **242,**

395; lucerne pests in, **100, 131, 427**; aphids on poppy in, **356**; forest pests in, **101, 102, 103, 242, 243, 334, 335, 337, 396, 428, 429, 432, 463, 464, 628, 629, 685, 701**; *Tetranychus dianthica* in greenhouses in, **439**; *Monomorium pharaonis* infesting hospital buildings in, **334**; *Ptilinus pectinicornis* infesting timber in, **467**; indigenous and intercepted pests of stored products in, **396, 468, 638, 687**; primary food-plants of *A. frangulae* in, **395**; bionomics and food-plant range of *Hydroecia micacea* in, **280**; other pests in, **101, 202, 203, 209, 299, 590, 625**; *Bacillus thuringiensis* isolated from *Anagasta kuehniella* in, **129**; fungus infesting *Athalia rosae* in, **684**; natural enemies of pests in, **101, 102, 131, 172, 204, 219, 280, 334, 336, 338, 429, 439, 463, 474, 491, 624, 628, 684, 690**

Gesarol (see DDT)

gestroi, Dicladispa

Ghana, pests of cacao in, **113, 115, 116, 118, 119, 378**; diseases of cacao in, **115, 118**; *Aulacaspis tubercularis* on mango in, **230**; forest pests in, **346, 373–378, 537**; forms of *Cadra cautella* on stored cacao in, **638**; beneficial insects in, **373, 375, 376, 377, 537**

ghanaensis, Trachyostus

ghesquierei, Antestiopsis lineaticollis

Gibbium psylloides, in cargoes imported into Britain from India, Pakistan and U.S.A., **700**; in buildings in Egypt, **634**; parasite of, **634**

gibbosa, Nadata

Gibraltar, *Eurygaster maura* in, **314**

giffardianus, Tetrastichus

giffardii, Dirhinus

giganteum, Mecedanum

Gilpinia, larval characters of species of, **172**

Gilpinia abieticola, **172**; on spruce in Germany, **463, 629**; bionomics of, **463**; sap from resistant spruce inhibiting feeding by, **629**

Gilpinia hercyniae (on spruce), **172**; in Canada, **172, 284, 663**; in Germany, **463, 629**; bionomics of, **463, 663**; sap from resistant spruce inhibiting feeding by, **629**; virus disease of, **663**; natural enemies of, **172, 663**

Gilpinia polytoma (on spruce in Germany), **172**; bionomics of, **463**; sap from resistant spruce inhibiting feeding by, **629**

Gilpinia socia, on pines in Austria, **474**

gilva, Sturmia (*Carcelia*)

Ginger (Stored), residues of insecticides in, **696**

glabratus, Phymatodes

glabrum, Trogoderma

glacialis, Hippodamia

Glass, *Agrotis ipsilon* seldom ovipositing on, **593**

Glasshouses, treatment of, with Kelthane against *Steneotarsonemus pallidus*, **309**

gleadowi, Brontispa (see *B. limbata*)

glebaria, Formica fusca

Gliricidia sepium, Xyleborus fornicatus on, in Ceylon, **619**

Glischrochilus fasciatus, experiments with, as vector of oak wilt in Wisconsin, **369**

Globe Artichoke (see *Cynara*)

glomeratus, Apanteles

gloverana, Acleris (*Lophoderus*)

gloverii, Lepidosaphes

Glucose, question of *Heliothis zea* in relation to content of, in maize, **97**; uptake of, by *Macrosteles fascifrons*, **653**; labelled with ^{14}C, **653**

l-Glutamic Acid, effects of, in diet for *Calligypona pellucida*, **63**

Glycerine, in diet for *Galleria mellonella*, **654**

glycines, Aphis

glycinivorella, Leguminivoro (*Cydia, Grapholitha*)

Glycogen, changes in content of, in larvae of *Pectinophora gossypiella* during diapause, **34, 35**

Glycyphagus destructor (in stored products), in Canada, **218**; in Poland, **183, 184**; occurrence of hypopi of, **183**

Glycyphagus domesticus, in stored medicinal herbs in Poland, **183**; occurrence of hypopi of, **183**

Glyodin, in spray mixtures against orchard pests, **3, 227, 371, 493, 509, 565**

glyphica, Ectypa (*Gonospileia*)

Glyphodes unionalis (see *Margaronia*)

Glypta fumiferanae, parasitising *Choristoneura pinus* in Wisconsin, **490**

Glyptomorpha deesae, parasitising *Chilo infuscatellus* in Pakistan, **277, 278**; effect of host food-plant on parasitism by, **278**

Gnathocerus cornutus, influence of climate on infestation of flour mills by, **466**; effect of high-frequency radiation of, **52**

Gnathotrichus materiarius, infesting pine logs in Massachusetts, **168**; treatment of logs against, **168**

Gnorimoschema operculella (see *Phthorimaea*)

Gomphrena globosa, effects of virus disease of, on feeding by *Myzus persicae*, **494**

gonagra, Caryedon

Goniozus, species of, parasitising Pyralids, **280**; introduced into Grenada from India, **280**
Goniozus japonicus, list of moths parasitised by, in Japan, **225**
Goniozus platynotae, parasitising *Argyrotaenia velutinana* in Missouri, **657**
Goniozus triangulifer, parasitising *Nacoleia octasema* in New Guinea, **671**
Gonocephalum, damaging cotton in Madagascar, **670**
Gonocephalum simplex, on pyrethrum in Kenya, **436**
Gonospileia glyphica (see *Ectypa*)
Gooseberry, *Bryobia ribis* on, in Austria, **473**
Gordiids, species of, parasitising insects in Britain, **239**
gorilla, *Tragocephala*
Goryphus ornatipennis, *Isotima javensis* misidentified as, **413**
Gossyparia spuria, on elms in Kansas, **5**; insecticides against, **5**
gossypiella, *Pectinophora* (*Platyedra*)
gossypii, *Aphis* (*Cerosipha*)
gossypiperda, *Bemisia* (see *B. tabaci*)
gracile, *Eubadizon*
Gracillaria azaleella, sprays against, on azalea in Connecticut, **76**, **77**
Graellsia isabellae, question of protection of, on pines in Spain, **680**
Grain Noctuid (see *Hadena sordida*)
Grain Weevil (see *Sitophilus granarius*)
Gram (see *Cicer arietinum*)
Graminella, species of, on bluegrass in Kentucky, **163**; dieldrin against, **163**
graminis, *Antonina*
graminum, *Brycbia*; *Mesopolobus*; *Siteroptes*; *Toxoptera* (*Schizaphis*)
granarium, *Macrosiphum* (see *M. avenae*); *Trogoderma*
granarius, *Sitophilus* (*Calandra*)
granati, *Tenuipalpus*
Grand Fir (see *Abies grandis*)
grandiosella, *Zeadiatraea*
grandis, *Anthonomus*
granella, *Nemapogon* (*Tinea*)
Grape Leafhopper (see *Erythroneura variabilis*)
Grapefruit, *Planococcus citri* on, in Israel, **635**; *Anastrepha ludens* on, in Mexico, **500**, **525**, **582**; pests of, in U.S.A., **99**, **371**; fumigation of fruit of, **500**, **582**
Graphiphora (see *Amathes*)
Graphlox (see Hexachlorocyclopentadiene)
Grapholitha funebrana (see *Cydia*)
Grapholitha glycinivorella (see *Leguminivora*)
Grapholitha molesta (see *Cydia*)
Grass, Brome (see *Bromus inermis*)
Grass, Guatemala (see *Tripsacum laxum*)
Grass, Johnson (see *Sorghum halepense*)
Grass, Pangola (see *Digitaria decumbens*)
Grass, Sudan (see *Sorghum sudanense*)
Grass, Timothy (see *Phleum pratense*)
Grasses, grasshopper damaging, in Argentina, **647**; *Aphodius tasmaniae* infesting, in S. Australia, **609**; *Bryobia graminum* on, in Austria, **473**; Cercopids on, in Brazil, **307**; pests of, in Britain, **168**, **695**; pests of, in Canada, **568**, **572**, **604**, **605**, **651**, **660**; *Pseudaletia unipuncta* on, in Ceylon, **126**; relation of Cicadellids to, in Czechoslovakia, **69**; *Calligypona pellucida* on, in Finland, **108**; pests of, in Germany, **335**, **686**; anholocyclic overwintering of *Rhopalosiphum padi* on, in Italy, **515**; *Chloriona furcifera* on, in Japan, **315**; populations of *Nematocerus* unaffected by rotation of, in Kenya, **27**; *Sesamia calamistis* on, in Madagascar, **514**; pests of, in New Zealand, **178**; moth-borers on, in Pakistan, **277**, **278**; pests of, in S. Rhodesia, **125**, **126**; pests of, in Sweden, **560**, **562**; pests of, in Switzerland, **688**, **692**; *Aeneolamia varia saccharina* on, in Trinidad, **459**; pests of, in U.S.S.R., **135**, **297**, **523**; pests of, in U.S.A., **98**, **104**, **151**, **152**, **163**, **272**, **521**, **651**; pests of, in Venezuela, **296**, **606**; overwintering of *Subcoccinella vigintiquatuorpunctata* on, **553**; question of migration of *Pachnephorus testaceipes* to, **670**; effects of, as food-plants for grasshoppers, **511**, **604**; locusts in relation to, **540**; other insects on, **270**, **272**; methods for investigation of fauna of, **108**; bollnäs disease of, **562**; cause of silver top of, **151**, **152**; measures against pests of, **339**, **514**; insecticide residues on, **178**, **307**, **516**, **521**; toxicity of Varsol to, **168** (See also Hay)
Grasshoppers, in Argentina, **292**, **483**; in Canada, **604**; in Italy, **195**; in New York, **148**; in Sudan, **29**, **433**; in Tanganyika, **701**; outbreaks of, in Venezuela, **296**; in Yugoslavia, **326**; varietal susceptibility of maize to, **606**; stored sorghum damaged by, **29**; erosion in relation to, **292**; adult habits of, **483**; natural enemies of, **596**; methods of rearing, **172**; decay of ^{32}P in, **524**; insecticides against, **148**, **195**, **347**, **604**; bibliography of locusts and, **292** (See also *Camnula*, *Colemania*, *Conocephalus*, *Dichroplus*, *Eyprepocnemis*, *Hieroglyphus*, *Melanoplus*, *Rhammatocerus* and *Trimerotropis*)
grassmani, *Trogoderma*

Gravity, review of injuries to insects by, **294**
Greece, pest of apple in, **60**; *Citrus* pests in, **124, 675**; *Prays oleellus* on olive in, **321**; Pentatomids on wheat in, **321**; *Phloeosinus armatus* on *Cupressus* in, **59, 60**; other pests in, **126, 314, 554**; parasite of *Chrysomphalus dictyospermi* in, **124**
gregaria, Schistocerca
Grenada, pests of sugar-cane in, **279**; beneficial insects in, **279, 280**
grenadensis, Ipobracon
Grevillea robusta, Xyleborus fornicatus on, in Ceylon, **619**
gripusalis, Azochis
griseana, Enarmonia (*Zeiraphera*)
griseola, Hydrellia
grosmanni, Trisetacus
Groundnut Products, in baits for insects, **165, 264, 493**; in diet for *Tribolium destructor*, **396**
Groundnuts, pests of, in Brazil, **446**; pests of, in Sudan, **433**; *Diabrotica undecimpunctata howardi* on, in Virginia, **260**; insecticides residues in, **160**
Groundnuts (Stored), insects infesting, **300, 673**; effects of insecticides on germination of, **301**
Gryllotalpa gryllotalpa, in Bulgaria, **418**; in Germany, **625**; zoophagous preferences of, **625**; baits for, **418**
Gryllus bimaculatus, bionomics of, in Israel, **379**; light-trap catches of, **379**; diet for, **379**
Guadeloupe, sugar-cane pests in, **513**
Guatemala, new Lepidoptera on pines in, **431**
Guava, Trypetids on, in Hawaii, **442**; *Rapala varuna* on, in India, **44**
Guiana, Dutch, *Rhizoecus falcifer* on coffee in, **230**; flight habits of aphids in, **438**
Guinea, Portuguese, *Caryedon gonagra* in stored groundnuts in, **300**
Guinea Corn (see Sorghum)
gularis, Aphomia
Gusathion and Gusathion A (see Azinphos-methyl)
Guthion (see Azinphos-methyl)
guttata, Parnara
Gymnoscelis pumilata, bionomics of, on *Citrus*, rose and vegetables in Italy, **544**; measures against, **544**
Gymnosoma fuliginosum, parasitising *Euschistus servus* in Arkansas, **274**
gynetelus, Trichomalus
Gypsonoma aceriana, on poplar in France, **206**
Gypsum, use of, in rearing *Tyrophagus longior*, **411**

H

Habrobracon (see *Bracon*)
Habrocytus tenuicornis, parasitising *Anthonomus pomorum* in Bulgaria, **556**
Habrolepis pascuorum, parasitic on *Quadraspidiotus perniciosus* in Yugoslavia, **129**
Hackberry (see *Celtis*)
Hadena basilinea (see *Apamea*)
Hadena sordida, on wheat and grasses in U.S.S.R., **523**; adult habits and parasites of, **523**; light-traps for, **523**; labelled with radioisotopes, **523**
Hadena suasa, bionomics of, on fruit trees in Bulgaria, **189**
Hadrobregmus carinatus, infesting building timber in New York, **466**; egg development of, **466**
Hairy Vetch (see *Vicia villosa*)
Haiti, *Lixophaga diatraeae* in, **25**
halterata, Megaselia
Haltica chalybea, parasite of, in Ontario, **587**
Haltica corni, bionomics of, on vetch and dogwood in Ontario, **586**; parasites of, **586, 587**
Haltica cyanea, on *Trapa bispinosa* in India, **414**
Haltica ulmi, parasite of, in Ontario, **587**
Halticoptera, hyperparasite of *Phytomyza rufipes* in England, **558**
hamadryadella, Lithocolletis (*Cameraria*)
hampei, Stephanoderes
harcyniae, Pissodes
hardenbergi, Crossotarsus (see *Doliopygus dubius*)
hargreavesi, Pseudococcus
hariolus, Phaeogenes
Harmolita (see *Tetramesa*)
Harmonia axyridis (see *Coccinella*)
harpagula, Drepana
Harpalus pennsylvanicus, in peach orchard in Ontario, **664**; effects of DDT on populations of, **664**
Harpalus rufipes, insecticides against, on strawberry in Britain, **304, 380**
Harrisina brillians (on vines), in Mexico, **78**; in U.S.A., **78**; virus disease and natural enemies of, **78**
harrisinae, Apanteles; *Pelecystoma*; *Sturmia*
harti, Hyaliodes
harveyi, Bessa (see *Ptychomyia selecta*)
Hawaii, *Myzus persicae* transmitting mosaic virus of curcubits in, **364**; *Cryptophlebia illepida* on macadamia in, **498**; Trypetids infesting fruits and vegetables in, **310, 442, 489, 492**, *Pseudaonidia clavigera* in, **126**; natural enemies of pests in, **310, 311, 407, 442**;

quarantine treatment for infested fruit and vegetables in, **263**
Hawthorn (see *Crataegus*)
Hay, contamination of, by aerial dusts applied to orchards, **164**; insecticide residues on, **267**
Hazel (see *Corylus avellana*)
Heat, effects of, on pyrethrins, **678** (See also Temperature)
hebetor, Bracon
Hedera helix, *Coccus hesperidum* on, in Norway, **293**
hederae, Aspidiotus
Hedges, Thysanoptera associated with, in Britain, **168**
Heilipus apiatus, on avocado in Florida, **272**
helianthi, Acanthiophilus; *Frankliniella* (see *F. occidentalis*)
Helianthus annuus, pests of, in Bulgaria, **321, 418**; *Heliothis armigera* on, in China, **287**; *Prodenia litura* on, in Egypt, **30**; *Strauzia longipennis* on, in Manitoba, **140**; seed treatment of, **418**
Heliconia, as natural host of *Pseudomonas solanacearum* in tropical America, **408**; Lepidoptera on, in Costa Rica, **488**; as food-plant of *Nacoleia octasema* in New Guinea, **670**
Helicopter (see Aircraft)
Helioplagia slossonae, parasitising *Thymelicus lineola* in Ontario, **568**
Heliothis, species of, on maize in Vietnam, **526**
Heliothis armigera, in Aden, **228, 669**; in S. Africa, **435**; in Bulgaria, **190**; in Ceylon, **618**; in China, **287**; in India, **257, 674**; in Italy, **677**; in Queensland, **136, 610**; in Sudan, **433**; in U.S.S.R., **297**; on *Cajanus*, **618**; on cotton, **136, 228, 287, 433, 669**; water status of cotton in relation to infestation by, **669**; on gram, **257**; on grasses, **297**; on lupins, **435**; on sunflower, **287**; on orange, **190**; on tomato, **347, 677**; other plants associated with, **287, 297**; bionomics of, **190, 435, 610**; factors affecting development and fecundity of, **287**; experiments with plant-growth stimulators and, **347**; infected by *Bacillus thuringiensis*, **674**; parasite of, **257**; effects of γ-radiation on, **522**; measures against, **136, 287, 618, 677**; attempted cross-breeding of congeners with, **610**
Heliothis assulta, bionomics of, in Queensland, **610**; attempted cross-breeding of congeners with, **610**
Heliothis dipsacea, on lucerne in Bulgaria, **188, 322**; insecticides against, **322**
Heliothis peltigera, on soy bean in Italy, **171**
Heliothis punctigera, bionomics of, in Queensland, **610**; attempted cross-breeding of congeners with, **610**
Heliothis rubrescens, bionomics of, in Queensland, **610**; attempted cross-breeding of congeners with, **610**
Heliothis scutosa, on lucerne in Bulgaria, **188**
Heliothis virescens, in Argentina, **482**; in U.S.A., **87, 358, 367**; on cotton, **87, 358, 367**; on tobacco, **358, 482**; on wild plants, **358**; bionomics of, **367**; parasite of, **358**; light-trap catches of, **87**; sprays against, **482**; detoxification of Ruelene by, **149**
Heliothis zea (in U.S.A.), on cotton, **22, 86, 87, 265, 367, 504, 578**; on maize, **84, 85, 97, 157, 239, 262, 358, 461, 590**; varietal resistance of maize to, **84, 96, 97**; on sorghum, **5**; on tomato, **359**; on wild plants, **358**; incubation period of, **264**; rôle of ascorbic acid in nutrition of, **504**; relation between infestation by *Pyroderces rileyi* and, **84**; method of rearing, **6**; bacterial diseases of, **360, 590**; natural enemies of, **22, 358**; light-trap catches of, **87, 239**; insecticides against, **85, 87, 262, 265, 359**; resistance to insecticides in strains of, **578**; timing of insecticides against, **157, 461**; absorption and metabolism of dimethoate by, **357**
Heliothrips rubrocinctus (see *Selenothrips*)
helleni, Dicondylus
Hellula rogatalis, absorption and metabolism of Ruelene by, **148**
Hellula undalis (on cabbage), in Ceylon, **618**; in Queensland, **390**; susceptibility of, to *Bacillus thuringiensis*, **618**; sprays against, **390**
helluo, Clytiomyia
Helomyza lurida (see *Suillia*)
helvetica, Anthaxia
helvolus, Aphycus (*Metaphycus*)
Hemerobius, predacious on *Conophthorus* in California, **306**
hemipterus, Carpophilus; *Metamasius*; *Valgus*
Hemitarsonemus latus, on jute in E. Pakistan, **623**; on cotton in Uganda, **534**; acaricides against, **534**
Hemiteles, parasitising *Phthorimaea operculella* in Bulgaria, **554**
Hemiteles dodecellae sp.n., parasitising *Exoteleia dodecella* in Czechoslovakia, **399**
Hemlock, Western (see *Tsuga heterophylla*)

Hemp, *Ostrinia nubilalis* on, in U.S.S.R., **40**; *Tyrophagus putrescentiae* infesting seeds of, **184**. (See also *Cannabis sativa*)
Henricus fuscodorsanus, sprays against, on Douglas fir in U.S.A., **80**
Heptachlor, against Curculionids, **10, 88, 89, 156, 647**; influence of lipids on susceptibility of *Hypera variabilis* to, **368**; against wireworms, **262, 416**; resistance to, in strains of *Conoderus*, **260**; against other Coleoptera, **18, 153, 174, 272, 369, 371, 520**; resistance to, in strains of *Diabrotica* spp., **5, 260**; against Hemiptera, **124, 157, 163**; against *Hylemya* spp., **281, 345, 422**; ineffective against *H. antiqua*, **605**; susceptibility or resistance to, in strains of *Hylemya* spp., **93, 602**; against other Diptera, **425, 698**; resistance to, in strains of *Psila rosae*, **15**; against Noctuids, **256, 414, 611**; against Pyralids, **15, 655**; low toxicity of, to larvae of *Dioryctria abietivorella*, **86**; against other Lepidoptera, **84, 331, 498, 526**; against *Cephus cinctus*, **157**; against *Forficula auricularia*, **261**; against grasshoppers and locust, **148, 621**; toxicity of, to plants, **262, 655, 698**; in dusts, **174, 345, 371, 422, 425, 611**; in granules, **18, 44, 89, 153, 156, 157, 160, 261, 371, 602, 647, 655, 698**; in sprays, **18, 84, 88, 148, 157, 163, 261, 267, 371, 422, 498, 520, 526, 602, 621, 698**; applied from aircraft, **655**; as deposit, **261**; seed treatment with, **157, 262, 345, 416, 422, 425, 698**; soil treatment with, **15, 18, 153, 157, 160, 256, 260, 281, 331, 345, 369, 422, 602, 698**; residues of, in soil, **369**; fertiliser impregnated with, **698**; applied in transplanting water, **15**; treatment of planting material with, **260**; vapour toxicity of, **498**; residues of, on plants, **88, 160, 267, 281**; tolerance limit for, **281**; residues and metabolism of, in cattle, **44, 265**; residues of, in egg of falcon, **642**; bioassay and determination of, **369, 460**; occurrence of, in technical chlordane, **521**; heptachlor epoxide as metabolite of, **160, 265, 521**; compatibility of carriers with, **299**; and azinphos-methyl, **148**; and dimethoate, **148**; and malathion, **124**; synergism of other insecticides with, **370**
Heptachlor Epoxide, seed treatment with, against *Cephus cinctus*, **157**; as metabolite of heptachlor: **521**; in plants, **88, 160, 281**; in fat of cattle, **44, 265**; in eggs and tissues of predatory birds, **642**
Herbicides, question of use of, against food-plants of *Aphrophora saratogensis*, **24**
Herbs (Stored), mites infesting, **183, 184**
Hercothrips (see *Caliothrips*)
hercules, Scolytoproctus
hercyniae, Gilpinia (*Diprion*)
heringiana, Phytomyza
Herrings, blowflies infesting, **231**
hesperidum, Amitus; *Coccus*
hesperus, Lygus
Hessian Fly (see *Mayetiola destructor*)
Heterobostrychus aequalis, infesting timber in Ghana, **374**
Heteronychus, insecticides against, on sugar-cane in Madagascar, **441, 514**
Heteronychus arator (*sanctaehelenae*), map of distribution of, **389**
Heteropelma calcator, parasitising *Bupalus piniarius* in U.S.S.R., **71**; favoured by DDT, **71**
Heteropeza pygmaea, bacteria associated with, on mushrooms in England, **384**; insecticides against, **384**
Heterospilus coffeicola (parasitising *Stephanoderes hampei*), not found in Ivory Coast, **435**
HETP (see Hexaethyl Tetraphosphate)
Hevea brasiliensis, insects visiting flowers of, in Malaya, **288** (See also Rubber)
2,2,4,4,6,6 - Hexa(1 - aziridinyl) - 2,4,6 - triphospha - 1,3,5 - triazine, effects of, on reproductive tissues of *Drosophila melanogaster*, **692**; tests of, as chemosterilant for *Panonychus citri*, **269**; in baits, **692**
Hexachlorobutadiene, tests of, as soil fumigant against *Phylloxera vitifoliae*, **253**; vines stimulated by, **253**
Hexachlorocyclopentadiene, against *Phylloxera vitifoliae*, **98**; in root dips, **98**; fumigant action of, **98**
6,7,8,9,10,10 - Hexachloro - 1,5,5a,6,9,9a-hexahydro - 3 - methyl - 6,9 - methano-2,4 - benzodioxepin, in baits for ants, **493**
Hexaethyl Tetraphosphate, in sprays against Tetranychids, **287, 288**
2,2,4,4,6,6 - Hexahydro - 2,2,4,4,6,6 - hexakis(1 - aziridinyl) - 1,3,5,2,4,6 - triazatriphosphorine (see 2,2,4,4,6,6 - Hexa(1-aziridinyl) - 2,4,6 - triphospha - 1,3,5 - triazine)
Hexamermis arvalis, bionomics of, parasitising *Hypera variabilis* in New York, **405**
7 Hexyl - 3 - (2 - hydroxy - 3 - formamidobenzamido) - 4,9 - dimethyl - 1,5 - dioxa-2,6 - dioxo - 8 - (iso - valeroyloxy)cyclononane (see Antimycin A)

Hibiscus, *Podagrica* spp. on species of, in Sudan, **431**
Hibiscus cannabinus, *Podagrica* spp. on, in India and in Sudan, **259, 431, 433**; seed treatment of, **431**
Hibiscus esculentus, Lepidoptera on, in Egypt, **31**; *Tetranychus macfarlanei* on, in India, **415**; *Euschistus servus* on, in Arkansas, **273**; question of *Macrosteles fascifrons* on, **163**; development of *Prodenia litura* on, **530**
Hibiscus ternifoliolus, new virus on, in Sudan, **126**
Hides, insects infesting, **396, 674**
Hieroglyphus banian, damaging crops in India, **257**
Hieroglyphus nigrorepletus, damaging crops in India, **257**; bionomics of, on maize, **257**; soil treatments against, **257**
hilaris, *Theronia*
hintzi, *Platypus*
Hippeastrum, *Coccus hesperidum* on, in Norway, **293**
hippocastani, *Melolontha*
Hippodamia convergens (predacious on insects), in British Columbia, **510**; in U.S.A., **88, 270**; in Venezuela, **607**; apparatus for study of flight patterns in, **271**; toxicity of insecticides to, **88**
Hippodamia glacialis, associated with *Mindarus abietinus* in N. Carolina, **270**
hirta, *Epicometis*; *Lagria*
hirtipennis, *Epitrix*
Hispa gestroi (see *Dicladispa*)
hispidulus, *Sitona*
Histamine, imidazole as antimetabolite of, **259**
l-Histidine, in diet of *Javesella* (*Calligypona*) *pellucida*, **63**
histrionica, *Murgantia*
Hoe 2784 (see Acricid)
Hofmannophila pseudospretella, in stored wheat in Britain, **379**
Holcocera pineae sp. n., on pine in Guatemala, **431**
Holfidal, containing carbazole (*q.v.*), **191**
Holland, apple pests in, **208, 209, 689, 690**; mites on peach in, **42, 439**; pear pests in, **343, 625**; aphids on crucifers in, **518**; *Tetranychus telarius* on cucumbers in, **439**; Thysanoptera on flax in, **291**; pests of potato in, **387, 397**; virus diseases of potato in, **396, 397**; forest pests in, **50, 106, 241, 343, 383**; *Tetranychus telarius* in glasshouses in, **41, 42, 50**; winter food-plants of *Myzus persicae* in, **397**; natural enemies of pests in, **42, 241, 344, 383, 439, 518, 689, 690**
Holly (see *Ilex*)
holoxanthus, *Aphytis*
Homalodisca coagulata, transmitting phony peach disease in U.S.A., **17, 350**; systemic use of Di-Syston against, **17**
Homona coffearia, on tea in Ceylon, **619, 673**; parasites of, **619, 673**; sprays against, **619**; effect of dieldrin on parasite of, **673**
homonae, *Macrocentrus*
Honduras, banana pests in, **45, 409, 647**; bacterial wilt of banana in, **409**; Reduviid predacious on *Platynota rostrana* in, **45**
Honey, *Galleria mellonella* damaging combs of, **588, 589, 654**; use of, to attract parasites, **71, 271**; in diets for insects, **7, 127, 274, 275, 287, 507**; effects of, on survival and fecundity of *Prodenia litura*, **33**
Honeydew, in relation to infection of lucerne by *Phoma herbarum medicaginis*, **648**; nuisance of, produced by *Myzocallis walshii*, **450**; aphid parasite attracted by, **633**; effects of, on insects, **510, 626**
Hop Hornbeam (see *Ostrya virginiana*)
hopkinsi, *Ips* (*Pityogenes*)
Hoplocampa brevis, parasitised by new Braconid in U.S.S.R., **136**
Hoplocampa flava, on fruit trees in U.S.S.R., **134, 136**; parasitised by new Braconid, **136**; aerosols against, **134**
Hoplocampa minuta, on fruit trees in U.S.S.R., **134, 136**; parasitised by new Braconid, **136**; aerosols against, **134**
Hoplocampa testudinea (on apple), in France, **59**; in Germany, **557**; parasitised by new Braconid in U.S.S.R., **136**
Hoplochelus rhizotrogoides, soil treatment against, damaging sugar-cane in Madagascar, **514**
Hoplodictya, species of, predacious on snails in U.S.A., **639**
Hops, pests of, in Britain, **695**; *Myzus humuli* on, in Bulgaria, **324**; *Tetranychus telarius* on, **203**; toxicity of DDT emulsion to, **324**
hordei, *Tetramesa* (*Harmolita*)
Hordeumvirus nanescens, **60**
Horismenus, parasitising *Alurnus humeralis* in Ecuador, **520**
Hornbeam, *Lymantria dispar* on, in U.S.S.R., **71**
Hornbeam, Hop (see *Ostrya virginiana*)
Hornworm, Tobacco (see *Protoparce sexta*)
Hornworm, Tomato (see *Protoparce quinquemaculata*)
Horogenes, auct. (see *Nythobia*)
hortensis, *Carabus*

hortulanus, *Bibio*
Hospital Buildings, infested by *Monomorium pharaonis*, **334**
House-fly (see *Musca domestica*)
Houses, arthropods in, **261, 372, 459, 473, 633, 634**
howardi, *Diabrotica undecimpunctata*
howra, *Euproctis*
HRS-16 (see Decachlorobi-2,4-cyclopentadien-1-yl)
humeralis, *Alurnus*; *Tomaspis* (see *Deois schach*)
Humidity, influence of, on effects of temperature on insect development, **288**; responses of insects to, **553**; effects of: on Coleoptera, **121, 122, 161, 224, 282, 468, 661, 674**; on infestation of timber and stored grain by Coleoptera, **376, 382, 539**; on resistance of lucerne to aphids, **263, 264**; on development of Lepidoptera, **28, 31, 32, 33, 236**; on mortality of Geometrids, **101**; on food intake by *Syrphus corollae*, **626**; on mites, **20, 107, 139, 282**; on pine bark, **169**; on light-trap catches, **472**; on efficiency of acaricides, **139**; on sorption and metabolism of fumigants by wheat and wheat products, **92, 93, 149**; on toxicity of fumigants to stored grain, **359**
humilis, *Iridomyrmex*
humuli, *Myzus* (*Phorodon*)
Hungary, aphids in, **57, 58**; *Cryptorhynchus lapathi* on basket willows in, **57, 336**; *Aceria phloeocoptes* on plum in, **133**; virus diseases of peppers and potatoes in, **57, 58**; natural enemies of pests in, **57, 58, 133**
huttoni, *Pentarthrum*
hyalinata, *Diaphania*
hyalinipennis, *Oxycarenus*
hyalinus, *Perilampus*
hyaloapex, *Coptotermes*
Hyaloides harti, predacious on mites in Nova Scotia, **565**; effects of sprays on populations of, **565**
Hyalopterus amygdali, on peach in Italy, **208, 210**; insecticides against, **208, 210**
Hyalopterus pruni, on plum in France, **298**; on cereals and grasses in Manitoba, **660**; insecticides against, **298**
hydei, *Drosophila*
hydrangeae, *Tetranychus*
Hydrellia griseola, on maize in Germany, **685**
Hydroecia micacea, in Britain, Canada and Germany, **280**; bionomics and polyphagous habits of, **280**; parasites of, **280**
Hydroecia petasitis, on *Petasites hybridus* in Switzerland, **280**; parasites of, **280**
Hydroecia xanthenes, sprays against, on globe artichoke in Sardinia, **676**
Hydrogen Cyanide (as fumigant), against *Citrus* pests, **195, 196, 200**; against Coccids on *Cupressus*, **328**; ineffective against *Panonychus ulmi*, **289**; against pests of stored products, **109, 125, 631, 637**; effects of, on plants, **258, 359**; metabolism and excretion of, in *Sitophilus granarius*, **109**; labelled with ^{14}C, **109**
Hydrogen Fluoride, toxicity of, to bees, **589**
Hydrogen Phosphide, as fumigant (see Aluminium Phosphide)
3 - (2 - Hydroxy - 2 - (5 - hydroxy - 3,5 - dimethyl - 2 - oxocyclohexyl)ethyl)-glutarimide (see Streptovitacin A)
Hydroxy Lecithin, emulsions of, for treatment of insects with lipid extracts, **108**
Hygromycin B, effects of, on aphids, **502**; effects of, on Tetranychids, **578**; derived from *Streptomyces hygroscopicus*, **578**
Hylastes obscurus, bionomics of, on red clover in New York, **370, 371**; insecticides against, **371**
Hylastes pinifex, infesting pine logs in Massachusetts, **168**; treatment of logs against, **168**
Hylastinus (see *Hylastes*)
Hylemya, species of, on maize in Germany, **685**
Hylemya antiqua (on onion), in Canada, **93, 604, 664**; in Finland, **108**; in France, **422**; attractiveness of other species and varieties of *Allium* to, **664**; insecticides against, **108, 422, 604**; susceptibility or resistance to insecticides in strains of, **93, 108, 604**
Hylemya brassicae (on crucifers), in Canada, **93, 217, 281, 602**; in Denmark, **427**; in England, **694**; in France, **422**; in Germany, **471**; in Norway, **344**; in U.S.S.R., **317**; bionomics of, **317, 344**; oviposition habits of, **281**; effects of temperature on immature stages of, **317**; varietal susceptibility of turnips to, **281**; rot associated with, **471**; Coleoptera predacious on, **217, 694**; trap-catches of, **427**; insecticides against, **345, 422**; susceptibility or resistance to insecticides in strains of, **93, 602**; method of rearing, **218**
Hylemya cilicrura, in Canada, **93, 281**; trap-catches of, in Denmark, **427**; in India, **43**; oviposition habits of, on varieties of turnip resistant to *H. brassicae*, **281**; susceptibility or resistance to insecticides in strains of, **93**

Hylemya coarctata, on wheat in England, **695**; flight activity of, **695**
Hylemya floralis (on crucifers), in Canada, **281**; bionomics of, in Norway, **345**; soil treatments against, **281**
Hylemya fugax, on brussels sprouts in Germany, **471**; rot associated with, **471**
Hylemya genitalis, not found in Bulgaria, **323**
Hylemya liturata (see *H. trichodactyla*)
Hylemya penicillifera, on cereals in Bulgaria, **323, 392, 478**; effect of sowing date on infestation by, **392**; measures against, **478**
Hylemya securis, on cereals in Bulgaria, **323, 392, 478**; effect of sowing date on infestation by, **392**; measures against, **478**
Hylemya trichodactyla, in Canada, **93, 217**; trap-catches of, in Denmark, **427**; on swede, **217**; parasite of, **217**; resistance to insecticides in strains of, **93**
Hylobius abietis, on pine in France, **206**
Hylobius albosparsus, bionomics of, on larch in Mongolia and U.S.S.R., **255**
Hylobius pales, on pine in U.S.A., **77**
Hylobius radicis, on pines in Ontario, **9**; infection of, by nematode and associated bacterium, **577**; insecticides against, **9, 10**
Hylobius rhizophagus sp. n., on *Pinus banksiana* in Wisconsin, **639**
Hylotrupes bajulus (in timber), in Britain, **89, 173, 643**; in Denmark, **640**; in France, **206**; effects of microclimate on, **640**; relation between timber age and larval weight of, **432**; treatments of timber against, **233, 431, 683**; effects of timber impregnation on larval growth of, **89**; methods of testing wood preservatives against, **110**
Hylurgops (see *Hylastes*)
hyoscyami, auct., *Pegomyia* (see *P. betae*)
Hyoscyamus niger, *Phthorimaea operculella* on, in Bulgaria, **554**
Hypera brunneipennis, sprays against, on lucerne in California, **88**; natural enemies of, **88**
Hypera nigrirostris, in Japan, **614**; temperature in relation to feeding by, **614**
Hypera postica (see *H. variabilis*)
Hypera punctata, on lucerne and clover in U.S.A., **148**; parasite and fungus disease of, **148**
Hypera variabilis (on lucerne in U.S.A.), varietal susceptibility of lucerne to, **364**; effects of light on feeding habits of, **582**; flight habits of, **368**; study on diapause and sexual development in, **90**; parasites of, **405, 585, 586**; not attacked by parasite of *H. punctata*, **148**; trap for, **368**; insecticides against, **19, 89**; lipid content related to toxicity of insecticides to, **368**
Hyperchalcidia, parasitising *Chilo zonellus* in Pakistan, **278**; effect of host foodplants on parasitism by, **278**
Hyperecteina, species of, parasitising Melolonthids in France, **195**; introduced into New York, **195**
hyperici, *Chrysomela* (*Chrysolina*)
Hypericum perforatum, factors limiting use of *Chrysomela* spp. for control of, in British Columbia, **508**
Hyphantria cunea, in Austria, **133, 295**; in Slovakia, **332**; in Yugoslavia, **129, 130, 328**; introduced into central Europe from U.S.A., **133**; on fruit trees, **129, 130, 295**; on other deciduous trees, **295, 332**; factors affecting development and fecundity of, **295, 332**; natural enemies of, **328, 332, 596**; tests of *Bacillus thuringiensis* against, **129, 130, 403**; colour forms of, **133**
Hyphantria cunea textor, **133**
hyphantriae, *Meteorus*
Hypochoeris radicata, Tortricids on, in S. Africa, **112**
Hypogastrura, species of, on mushrooms in Bulgaria, **322**
Hypolithus bicolor, feeding activity of, in Canada, **282**
Hyponomeuta padellus, on plum in Switzerland, **636**; *Bacillus thuringiensis* against, **636**
Hyponomeuta padellus malinellus (on apple and other fruit trees), in Switzerland, **636**; in U.S.S.R., **134, 135**; *Bacillus thuringiensis* against, **134, 135, 636**; insecticides against, **134, 135**
Hypothenemus pusillus, attacking *Tragocephala gerilla* in Nigeria, **119**
hypothrophica, *Lyda* (see *Cephalcia abietis*)
Hyssopus thymus, parasitising larvae of *Rhyacionia buoliana* in U.S.A., **166**
Hysteroneura setariae (see *Carolinaia*)

I

Ibalia leucospoides, parasitising *Sirex noctilio*, **444, 445**; introduced into New Zealand from England, **444**
Icerya pulchra, on mango in India, **258**
Icerya purchasi, in France, **58**; on *Citrus* in Sicily, **198**; attacked by *Rodolia cardinalis*, **58, 198**
idaei, *Aphis*
Idaho, *Systole* sp. damaging carrot seed in, **588**; pests of Douglas fir in, **215**,

576, 577; insects damaging bitterbrush in, **580**
Idiocerus niveosparsus, on mango in Vietnam, **526**
Ilex aquifolium, pests of, in U.S.A., **51**
Ilex opaca, *Phytomyza ilicicola* on, in Connecticut, **76**
ilicicola, *Blastothrix*; *Phytomyza*
ilicifoliana, *Rhopobota naevana*
ilicis, auct., *Phytomyza* (See *P. ilicicola*)
illepida, *Cryptophlebia*
Illinois, *Diabrotica* spp. on maize in, **272**; forest pests in, **572**; other pests in, **264, 587**
Imidazole, toxicity of, to arthropods, **259, 260**; antimetabolic action of, **259**; treatment of textiles and foodstuffs with, **259**; synergists with, **259, 260**
imitata, *Melanolophia*
immaculata, *Cyclocephala*; *Scutigerella*
immigrans, *Drosophila*
imparilis, *Diacrisia* (*Spilosoma*)
imperator, *Ephialtes* (*Dolichomitus*)
impleta, *Schistocerca*
incertulas, *Tryporyza* (*Schoenobius*)
incisi, *Opius*
inclusum, *Trogoderma*
inconspicua, *Magdalis*
India, *Prodenia litura* on castor in, **414**; *Toxoptera* spp. and tristeza virus of *Citrus* in, **176**; *Phycita orthoclina* on tamarind and *Bombax malabaricum* in, **675**; pests of mango in, **230, 258, 415**; pests of other fruits in, **44, 529, 675**; *Geococcus citrinus* on *Piper betle* in, **640**; cereal pests in, **49, 203, 257, 258, 415, 530, 571**; *Sphenoptera deducta* on *Cyperus* in, **44**; insects on sugar-cane in, **43, 49, 413, 527**; *Nephantis serinopa* on coconut in, **527**; coffee pests in, **177, 404, 527**; *Antigastra catalaunalis* on sesame in, **620**; pests of tea in, **530, 620**; pests of cotton in, **49, 530, 674**; pests of leguminous vegetables in, **257, 532, 649**; mosaic virus of beans in, **649**; pests of other vegetables in, **101, 256, 414, 415, 531, 640**; *Nupserha bicolor postbrunnea* on jute in, **49**; tobacco pests in, **414, 675**; pests of palms in, **235, 621**; forest pests in, **44, 459, 598**; pests of ornamental and shade plants in, **258, 528**; *Tropaeolum* virus in, **528**; locusts in, **528, 529, 531, 621, 640, 703**; termites in, **398, 619**; insects in stored grain in, **530, 620, 622**; pests of other stored products in, **256, 529, 531, 673, 674, 700**; food-plant range of *Ferrisia virgata* in, **529**; new food-plants of *Sylepta lunalis* in, **571**; other pests in, **43, 49, 123, 517, 571**; insect pests of crops and stored products in, **349**; *Microlarinus* spp. on weeds in, **456, 496**; *Bacillus thuringiensis* infecting *Heliothis armigera* in, **674**; fungus diseases of insects in, **258, 620**; parasite of silkworms in, **259**; natural enemies of pests in, **49, 101, 125, 235, 257, 277, 280, 413, 459, 527, 528, 530, 531, 571, 598, 620, 621**
Indiana, pests of cereals in, **99, 239, 505, 516**; Coleoptera on cucumber in, **239**; *Aegeria* spp. on peach in, **16**; *Protoparce sexta* on tobacco in, **239**; tomato pests in, **162, 163, 239**; pests of stored cereals in, **99**; virus disease of *Trichoplusia ni* in, **702**
indica, *Apis*; *Atherigona*; *Raoiella*
indicum, *Syntomosphyrum*
indicus, *Allophanurus*; *Liodontomerus*; *Proceras*
Indonesia, *Xyleborus compactus* on coffee in, **517**; *Brevipalpus phoenicis* on tea, in **53**; pests of other crops in, **457** (See also Java)
Indopol Polybutenes, **595**
inexpectata, *Pimelia*
inferens, *Sesamia*; *Sturmiopsis*
infirmus, *Macrocentrus*
infuscatellus, *Chilo* (*Chilotraea*)
inimica, *Endria*
innotata, *Tryporyza* (*Scirpophaga*)
innumerabilis, *Pulvinaria*
Inostemma opacum, parasitising *Contarinia medicaginis* in France, **550**
inouyei, *Contarinia*
inquisitor, *Ephialtes* (*Epiurus*)
Insecticides (and acaricides), list of, approved for use in Britain, **292**; approval and use of, in Finland, **41**; list of French names for, **422**; review of use of, in Italy, **195**; tests of organic compounds as potential, **9, 154, 155, 210, 382, 489, 495, 521**; relation of structure to toxicity of, **154, 155, 210, 299, 355, 490, 495**; attempted identification of, by comparative toxicity method, **155**; enzyme inhibition by, **154, 155, 298**; methods for evaluation of, **46, 83, 103, 207, 229**; apparatus for tests of, **138, 170, 217**; bioassay of, **108, 282, 303, 460, 521, 640**; apparatus for applying, **84, 640**; reviews of uses of, **60, 61, 177, 238, 440, 441, 545, 695**; timing of applications of, **95, 157, 691**; development of resistance to, **93, 238, 300**; metabolism of, in mammals, **524**; toxicology and hazards of use of, **196, 238, 240, 294, 467, 468, 546, 640**; effects of, on wildlife, **400, 642, 686**; effects of, on flavour of fruits and vegetables, **241**; reviews on residues of, **240, 241**; determination of residues of, **46, 208, 238, 240, 241, 460**; tolerance

limits for, **241, 281**; integration of, with biological control, **104, 551, 552, 689–691**; bibliography on radioisotopes and, **389**; preparations of *Bacillus thuringiensis* contaminated by, **172**; effects of storage on, **400**
Insects, list of, on sugar-cane in India, **43**; visiting flowers of rubber in Malaya, **288**; on economic plants in Papua and New Guinea, **237**; check list of agricultural species of, in Persia, **107**; as pests of crop plants in Turkey, **50**; diseases of, in U.S.A., **457**; on sugar-cane in Venezuela, **284**; as pests of crops in warm climates, **238**; survey of damage to electrical installations by, **234**; review of toxins and venoms of, **177**; population dynamics of, **236, 237**; determination and characteristics of diapause in, **236, 386, 388**; influence of humidity on effects of temperature on development of, **288**; physiological results of stress on, **177**; water relations of cuticle of, **236**; sensory physiology of, **239, 553**; phase variation in, **672**; reviews of evolution in, **177**; part of treatise on pathology of, **294**; effects of γ-radiation on, **525**; in relation to use of insecticides, **108, 177, 689, 695**; review of fumigation of foodstuffs against, **240**; collecting and sampling methods for, **367, 383, 569**; preservation of specimens of, **238**; books on (see under Reviews)
insertum, *Rhopalosiphum*
insidiosus, *Aphycus* (*Metaphycus*)
instigator, *Pimpla*
insulana, *Earias*
insulare, *Melittomma*
integriceps, *Eurygaster*
intermedia, *Brachymeria*
interpunctella, *Plodia*
interruptus, *Crossotarsus* (see *Doliopygus dubius*); *Scymnus*; *Tydeus*
Intration (see Thiometon)
Iodine, Radioactive, used for locating nests of *Camponotus*, **348**
o-, m- and p-Iodophenyl Methylcarbamate, anticholinesterase activity of, **154**
ionephela, *Epichorista*
Ionone, attraction of *Eulaema tropica* to isomers of, **587**
Iowa, maize pests in, **590, 656**; bacterial diseases of Lepidoptera in, **590**
Iphiaulax, *Analeptes trifasciata* parasitised by species of, in Nigeria, **377**
Iphiaulax melanarius, **377**
Ipideurytoma spessivtsevi, hyperparasite of *Trypodendron lineatum* in Czechoslovakia, **252**
Ipobracon grenadensis, parasitising larvae of Pyralids in Grenada, **279**
ipomoeae, *Bedellia*
Ips acuminatus, on pines in Germany, **464**
Ips amiskwiensis sp. n., on conifers in Canada and U.S.A., **702**
Ips baicalicus, on *Pinus cembra* in Mongolia and U.S.S.R., **255**
Ips caelatus, infesting pine logs in Massachusetts, **168**; treatment of logs against, **168**
Ips calligraphus, infesting pine logs in Massachusetts, **168**; treatment of logs against, **168**
Ips cembrae, question of synonymy of, **254**
Ips chalcographus (on spruce), in Norway, **345**; in Yugoslavia, **465**; insecticides against, **345, 465**
Ips confusus (on pines in U.S.A.), relation of resin flow to infestation of pines by, **220**; flight habits of, **354**; population dynamics of, **702**; reactions of, to attractants, **354, 451**; marking of, **354**
Ips hopkinsi, infesting pine logs in Massachusetts, **168**; treatment of logs against, **168**
Ips pini, infesting pine logs in Massachusetts, **168**; treatment of logs against, **168**
Ips ponderosae, on *Pinus ponderosa* in California, **354**; attractants for, **354**
Ips semirostris sp. n., on spruce in Alaska and Canada, **702**
Ips subelongatus, in Mongolia, **254**; bionomics of, on conifers in U.S.S.R., **254**; natural enemies of, **254**
Ips typographus (on conifers), in Czechoslovakia, **69, 70, 465**; in France, **206**; in Yugoslavia, **465**; traps for, **69**; effects of trap logs for, on populations of *Trypodendron lineatum*, **465**; sprays against, **465**
ipsilon, *Agrotis*
Iraq, pests of date palms in, **123, 539**; *Aulacaspis tubercularis* on mango in, **230**; *Eurygaster integriceps* in, **313**; natural enemies of *Ommatissus binotatus lybicus* in, **123**
Ireland, Republic of, virus disease of beet in, **386**
Iridium, Radioactive, effects on *Trogoderma granarium* of γ-radiation from, **337**
Iridomyrmex humilis, associated with insects in Italy, **201, 419, 420**; insecticides against, **201**
Iris, *Macronoctua onusta* and soft rot of, in U.S.A., **504, 652**
Iris pseudacorus, *Hydroecia micacea* on, in Germany, **280**
irregularis, *Trichiocampus*

isabellae, Graellsia
Isaria, infesting *Choristoneura fumiferana* in Quebec, **659**
Isaria farinosa, in Maine, **603**; infesting *Athalia rosae* in Germany, **684**; infesting Lepidoptera, **226, 603**
Isaria fumosorosea (see *Spicaria*)
isiacum, Chiracanthium
Isochlorthion (see O,O-Dimethyl O-4-Chloro-3-nitrophenyl Phosphorothioate)
Isodimethoate, anticholinesterase activity of, **495**
Isodrin, toxicity of, to *Aphis maidis*, **530**; against Coleoptera, **18**; toxicity of, to *Prodenia litura*, **414**; toxicity of, to *Locusta migratoria*, **621**; in sprays, **18, 621**; soil treatment with, **18**
Isolan, against *Coccus hesperidum*, **293**; susceptibility or resistance to, in strains of *Drosophila melanogaster*, **627**; in sprays against *Myzus humuli*, **324**; effects of, on beneficial arthropods, **690**; in sprays, **690**; as deposit, **690**; as plant dip, **293**; and Pyrazoxon, **293**
Isomalathion, anticholinesterase activity of, **495**
Isomera cinerascens (see *Cnephalia*)
o-Isopropoxyphenyl Methylcarbamate, tests of, against *Aculus schlechtendali*, **82**; against insects, **141, 293**; repellency of, to *Anthonomus grandis*, **363**; as plant dip, **293**; tests of systemic activity of, **141**
Isopropyl Alcohol, as solvent for antimetabolite, **259**
m-Isopropylphenyl Methylcarbamate, in dusts against *Heliothis zea*, **263**; anticholinesterase activity of, **154**
Isosafrole, as attractant for termites in fungus-infested timber, **494**
Isotima javensis, parasitising *Scirpophaga nivella* in India and Java, **413**; synonymy of, **413**
Israel, *Planococcus citri* on *Citrus* in, **634**; *Batocera rufomaculata* on fig in, **464**; *Eriophyes vitis* on vines in, **296**; *Phoracantha semipunctata* on *Eucalyptus* in, **464**; pests of beet in, **479, 635**; cotton pests in, **479, 635**; *Myiopardalis pardalina* on cucurbits in, **296**; *Margaronia unionalis* on olive, jasmine and *Ligustrum* in, **479**; *Prodenia litura* on groundnut, clover, lucerne, peas and tomato in, **479**; *Orgyia dubia* on *Polygonum equisetiforme* in, **478**; book on pests of field crops in, **237**; pests of stored grain in, **125, 237**; other pests in, **313, 379**; natural enemies of pests in, **296, 479**
Italy, pests of artichoke in, **676**; *Cleonus* spp. on beet in, **195, 331, 701**; pests of tomato in, **677**; pests of other vegetables in, **171, 544, 677, 678**; *Rhagoletis cerasi* on cherry in, **36, 37, 38, 208,289**; *Citrus* pests in, **124, 195, 196, 208, 419, 544**; pests of vines in, **542, 543, 630, 678**; pests of other fruits in, **37, 38, 39, 194, 195, 196, 208, 210, 234, 248, 289, 330, 421, 486, 543, 629, 677**; relation of *Psylla pyricola* to pear decline in, **485, 486**; olive pests in, **38, 39, 195, 196, 197, 200, 208, 241, 329, 330, 420, 421, 545, 631, 632**; *Contarinia medicaginis* on lucerne in, **550**; *Barytychius avulsus* on wheat in, **173**; forest pests in, **37, 196, 541, 542**; *Carulaspis visci* on mistletoe in, **328**; pests of ornamental plants in **234, 328, 544, 545, 630, 677**; pests of stored foodstuffs in, **466, 631, 701**; ant associated with *Planococcus citri* in, **419**; grasshoppers and locusts in, **195**; anholocyclic development of *Rhopalosiphum padi* in, **515**; survey of data on phytophagous mites in, **39**; *Tetranychus cinnabarinus* in, **303**; natural enemies of pests in, **124, 195, 197, 200, 328, 329, 330, 419, 420, 542, 543, 545, 629, 630, 632**; book on horticultural pests in, **104**; review of biological control of Trypetids in, **195**; review of use of insecticides in, **195**. (See also Sicily)
Itoplectis, parasitising *Choreutis bjerkandrella* in France, **338**
Itoplectis behrensiella, parasitising *Rhyacionia buoliana* in Argentina, **645**
Itoplectis conquisitor (parasitising Lepidoptera), in Canada, **3, 213, 568**; in U.S.A., **166, 490, 665, 666**; influence of food-plants of *Rhyacionia buoliana* on, **213**
Ivory Coast, Mirids on cacao in, **440**; Coleoptera on coffee in, **373, 434, 440**; *Dysmicoccus brevipes* on pineapple in, **524**; ant associated with *D. brevipes* in, **524**; parasites and fungus disease of *Stephanoderes hampei* in, **373, 434, 435**
Ivy (see *Hedera helix*)

J

Jaapiella medicaginis, effect of, on permeability of lucerne cells, **458**
Jack Pine (see *Pinus banksiana*)
jacobi, Capitophorus (*Pentatrichopus*)
Jamaica, *Elasmopalpus lignosellus* on sugar-cane in, **648**; *Lixophaga diatraeae* in, **25**; pests of stored products in, **304, 398, 696, 697**

Jammu, pests of herbs in, **620, 621**
Janus compressus, bionomics of, on pear in Sicily, **248**; measures against, **249**
Japan, pests of apple in, **46, 226, 227, 315, 316, 613, 615, 616**; pests of other fruits in, **412**; *Chloriona furcifera* on grasses in, **315**; pests of rice in, **47, 48, 226, 315, 413, 616, 617**; aphids on rape in, **412**; pests of soy bean in, **572; 613**; *Adoxophyes orana* on tea in, **316**; forest pests in, **103, 412, 413**; pests of ornamental plants in, **225, 348**; *Rhizoglyphus echinopus* and *Fusarium* rot of bulbs in, **617**; food-plant range of *Listroderes costirostris* in, **614**; pests of stored foodstuffs in, **126, 411**; other pests in, **104, 226, 517, 518, 614**; spiders in apple orchards in, **615**; beneficial insects in, **225, 226, 227, 412, 413**
Japanese Larch (see *Larix leptolepis*)
japonica, Popillia; *Propylea*
japonicus, Goniozus
Japspidia stygia, effects of crowding on larvae of, **672**
Jasmine, *Margaronia unionalis* on, in Israel, **479**
Jauravia quadrinotata, predacious on *Fiorinia theae* in India, **620**
Java, *Xyleborus destruens* on cacao in, **638**; *Aulacaspis tubercularis* on *Cinnamomum zeylanicum* in, **230**; *Proceras sacchariphagus* on sugar-cane and *Saccharum spontaneum* in, **276**; *X. destruens* on forest trees in, **517, 638**; other pests in, **413, 514, 517**; beneficial insects in, **276, 413, 514, 527**
javensis, Isotima (*Eripternimorpha, Gambroides*)
Javesella gen. n., **348**
Javesella (*Calligypona*) *obscurella*, on cereals in Finland, **64, 471**; and virus diseases, **64**; question of natural enemies of, **471**
Javesella (*Calligypona*) *pellucida* (on cereals), in Finland, **63, 64, 108, 459, 471**; in Sweden, **563**; relation of, to *Phleum pratense*, **63**; transmitting virus diseases, **64, 291, 471, 563**; bionomics of, **563**; nature of salivary toxin of, **63**; effects on oats of extract of, **459**; question of natural enemies of, **471**; methods of collecting, **108**; as type species, **348**
jesuita, Bostrychopsis
jocosa, Feralia
Johnson Grass (see *Sorghum halepense*)
Jordan, *Eurygaster integriceps* in, **313**
jucundus, Amblyteles
juglandicola, Chromaphis
Juniper (see *Juniperus*)
juniperi, Carulaspis
Juniperus, Carulaspis spp. on species of, in Italy, **328**; *Phloeosinus armatus* feeding on species of, **59**
Juniperus chinensis, Oligonychus ununguis on, in Germany, **334**
Juniperus communis, pests and fungus disease of, in Austria, **683**
Juniperus horizontalis, new species of *Cinara* on, in Manitoba, **702**
Juniperus sabina, Oligonychus ununguis on, in Germany, **334**
junodi, Kotochalia
Jute, *Nupserha bicolor postbrunnea* on, in India, **49**; pests of, in E. Pakistan, **622**
Jute Bags, treatment of, with malathion against pests of rice bran, **304**

K

Kale, aphids on, in New Zealand, **180, 181, 445**; parathion residues on, **361**
Kallstroemia, Microlarinus spp. in relation to species of, **456, 496**
Kalotermes approximatus, infesting fruit trees in Florida, **21**
Kalotermes flavicollis, tests of resistance of textiles and timbers to, **100, 236**; toxicity of insecticides to, **236, 251**
Kalotermes minor, metabolism of sulphuryl fluoride in, **520**
Kansas, pests of cereals in, **5, 271, 297, 656**; pests of lucerne in, **654**; development of cereal and lucerne varieties in, for resistance to insects, **244**; *Anasa tristis* on squash in, **157**; forest pests in, **5, 14, 15**; Coleoptera in stored wheat in, **13**; *Petrobia latens* in, **166**; *Nabis* spp. predacious on lucerne pests in, **654**
Kaolin, killing Bruchids in stored beans, **300**; as carrier for pyrethrum dust, **106**; compatibility of, with heptachlor, **299**
Kaolin, Activated, mode of action of, against *Tribolium castaneum*, **232**
Karathane, tests and uses of, against mites, **9, 82, 450**; *Nasonia vitripennis* unharmed by, **690**
kaufmanni, Alophus
KE 718 (see 1,3,4,5,6,7,8,8-Octachloro-3a,4,7,7a - tetrahydro - 4,7 - methanophthalan)
keegani, Melichares
keeni, Ruebsaamenia
Keiferia lycopersicella, on tomato in California, **359**; *Bacillus thuringiensis* ineffective against, **360**; insecticides against, **359**
Kel 20, **200**

Kelthane, tests and uses of, against Tetranychids, **9, 42, 196, 199, 200, 208, 287, 288, 290, 297, 366, 424, 448, 450, 543, 635, 656, 669;** factors affecting toxicity of, to eggs of *Tetranychus telarius*, **139, 433;** susceptibility or resistance to, in strains of Tetranychids, **50, 80, 81, 82, 83, 94, 691;** against other mites, **82, 164, 309, 332;** effects of, on beneficial arthropods, **2, 42, 690;** resistance to, in predacious mites, **491;** comparative toxicity of, to arthropods, **155, 424;** effects of, on strawberry yields, **288;** in dusts, **562;** in sprays, **9, 199, 200, 287, 288, 290, 297, 309, 332, 448, 543, 562, 669;** as deposit, **690;** vacuum treatment of strawberry plants with, **164;** residues of, on pears, **496;** residues of, in milk and tissues of cattle, **454;** analysis of residues of, **454, 460;** and Tedion, **94, 543**
Kelthane K 20, **199**
Kenaf (see *Hibiscus cannabinus*)
Kentucky, pests of bluegrass in, **151, 152, 163**
Kenya, *Nematocerus* sp. on cereals in, **27;** *Citrus* pests in, **230;** *Aulacaspis tubercularis* on mango in, **230;** *Leucoptera* spp. on coffee in, **536;** cotton pests in, **669, 670;** pests of pyrethrum in, **436, 541;** forest pests in, **400;** other pests in, **176, 590;** pests of stored products in, **462, 699;** beneficial insects in, **230**
Kepone (see 2,3,3a,4,5,6,7,7a,8,8-Decachloro-3a,4,7,7a-tetrahydro-4,7-methanoindene-1-one)
keralicus, Stethorus
Kerosene, attractiveness of logs to bark-beetles increased by, **354;** dispersion of antimetabolite in, **259;** treatments of timber with insecticides in, **233**
Kestrel (see *Falco tinnunculus*)
khapra, Trogoderma (see *T. granarium*)
Khaya ivorensis, Coleoptera infesting logs of, **374**
klugii, Tritneptis
Knautia arvensis, as food-plant of *Macrosiphum euphorbiae*, **471**
koebelei, Macrocentrus
koenigii, Dysdercus
kolobowae, Agromyza
kolophon, Sogatella (*Sogata*)
Kotochalia junodi, on cacao in Nigeria, **119, 571;** sprays ineffective against, **119**
kraatzi, Xyleborus (see *X. perforans*)
kraemeri, Empoasca
Kratochviliana boops, parasitising *Coleophora laricella* in Sweden, **41, 628;** development of winter generation of, **41;** X-ray study of, **628**
Kratochviliana gemma, as parasite and hyperparasite of *Napomyza lonicerella* in Italy, **630**
Kudzu-vine (see *Pueraria hirsuta*)
kuehniella, Anagasta (*Ephestia*)
kunoense, Eulecanium (*Lecanium*)
kurdjumovi, Rungsia
kuvanae, Ooencyrtus

L

L 395 (see Dimethoate)
Labels, use of self-adhesive, for measurement of spray deposits, **271**
Labidostomis stenostoma, on pistachio in Turkmenia, **40**
Labrorychus, parasitising *Thymelicus lineola* in Ontario, **568**
Labrorychus alpinus, **568**
Lachnosterna longipennis, bionomics of, on fruit trees and field crops in India, **675**
lactea, Pachypappella (see *P. populi*)
lacteicolor, Apanteles
lacteus, Coptotermes
lacunana, Argyroploce
Ladino Clover (see *Trifolium repens latum*)
Laemophloeus biguttatus, transmitting canker fungus of *Platanus* in New Jersey, **351**
Laemophloeus minutus (see *Cryptolestes pusillus*)
Laemophloeus truncatus, considered a synonym of *Cryptolestes turcicus*, **126**
Laevicephalus striatus (see *Psammotettix*)
laevigatella, Argyresthia
laevigatus, Alphitobius; *Apanteles*
laevis, Macrosteles
laeviusculus, Telenomus
Lagria hirta, on spruce in Germany, **103**
Lamachus, parasitising *Neodiprion swainei* in Quebec, **508;** relation of other parasites to, **508**
Lambdina fiscellaria lugubrosa, on *Tsuga heterophylla*, **665;** toxicity of insecticides to larvae of, **664**
Lambdina fiscellaria somniaria, on Garry oak in British Columbia, **405, 506;** tests of *Bacillus thuringiensis* against, **506;** histopathology of virus disease in, **405**
lambens, Sarcophaga
lambi, Tetranychus
Lamida sordidalis, on mango in India, **415**
Lamium album, Tetranychus telarius on, **203**
Lampetia equestris (see *Merodon*)
Lampides boeticus (see *Cosmolyce*)
Lampronota nitida, parasitising *Hadena sordida* in U.S.S.R., **523;** influence of

diet on fecundity of, **523**; labelled with radioisotopes, **523**
lampros, *Bembidion*
lanigerum, *Eriosoma*
Laodelphax gen. n., **348**
Laodelphax striatella, bionomics of, on rice in China, **391**; measures against, **391**; as type species, **348**
Lapachol, termite deterrent isolated from teak, **110**
lapathi, *Cryptorhynchus*
Laphygma (see *Spodoptera*)
laphygmae, *Meteorus*
Larch, pests of, in Canada, **143, 144, 563**; bark-beetles on, in Czechoslovakia, **69**; *Taeniothrips laricivorus* on, in Germany, **242**; *Boarmia bistortata* on, in Holland, **241**; *Dioryctria abietella* on, in Italy, **541**; pests of, in Mongolia, **254, 255**; *Chermes viridis* on, in Norway, **637**; *Coleophora laricella* on, in Sweden, **41, 628**; *Enarmonia griseana* on, in Switzerland, **247**; pests of, in U.S.S.R., **74, 254, 255**; *Choristoneura fumiferana* on, in U.S.A., **492**; fungus disease of, confused with attack by *Pristiphora erichsonii*, **144**; systemic treatment of, **242**; injection of, with sodium arsenite, **69**
Larch, Japanese (see *Larix leptolepis*)
lareynii, *Microlarinus*
laricella, *Coleophora*
laricis, *Cinara*
laricivorus, *Taeniothrips*
Laricobius erichsonii (predacious on *Chermes piceae*), in Czechoslovakia and Germany, **219**; introduced into U.S.A., **219**; bionomics of, **219**
Lariophagus distinguendus, bionomics of, parasitising Coleoptera in Egypt, **634**
Larix (see Larch)
Larix decidua, susceptibility of, to *Chermes viridis* in Norway, **637**
Larix laricina, outbreaks of *Pristiphora erichsonii* on, in Canada, **143**; *Choristoneura fumiferana* on, in U.S.A., **492**
Larix leptolepis, *Boarmia bistortata* on, in Holland, **241**; susceptibility of, to *Chermes viridis* in Norway, **637**
Larix sibirica, *Chermes viridis* on, in Norway, **637**
Lasioderma serricorne, in India, **531**; in Jamaica, **696**; in Texas, **11**; in stored foodstuffs, **11, 696**; in stored tobacco, **531**; bionomics of, **531**; measures against, **11, 12, 167, 231, 696**
Lasioptera rubi, parasite of, in Bulgaria, **322**
Lasiosina cinctipes, on cereals in Sweden, **560**
Lasius neoniger, in relation to *Toxoptera graminum* in S. Dakota, **693**
Lasius niger, protection of *Aphis fabae* by, in Britain, **469**
Laspeyresia funebrana, *nigricana*, *resinosae* and *splendana* (see *Cydia*)
Laspeyresia woeberiana (see *Enarmonia formosana*)
Laspeyresia zebeana (see *Cydia*)
lata, *Anisoplia*; *Ctenicera* (*Corymbites*)
latens, *Petrobia*
lateralis, *Phytomyza* (*Napomyza*)
Latex, used in experiments with oil emulsions against Coccid, **362**
Latheticus, in pit-stored sorghum in Sudan, **29**
Latheticus oryzae (in stored grain), in India, **530**; in Texas, **11**; influence of climate on infestation of flour mills by, **466**; predator of, **530**; tests and uses of insecticides against, **11, 12**
Lathridius minutus, in stored wheat in Saskatchewan, **221**
Lathyrus odoratus, *Macrosteles fascifrons* transmitting aster-yellows virus to, in California, **649**; *Macrosiphum caraganae* not surviving on, **507**
latiferreana, *Cydia* (*Melissopus*)
latipes, *Pseudococcus longispinus* (see *P. obscurus*); *Scleron*
latus, *Hemitarsonemus*; *Oxycarenus*
latysiphon, *Rhopalosiphoninus*
Lauryl Dimethylbenzyl Ammonium Chloride, treatment of mushroom beds with insecticides and, **384**
lautus, *Bracon*
Lavender (*Lavandula vera* (*angustifolia*)), pests of, in France, **246, 515**
Lead Arsenate (against orchard pests), in dusts, **656**; in sprays, **3, 60, 227, 266, 304, 340, 360, 426, 493, 501, 544**; against *Macronoctua onusta* on iris, **505**; effects of, on beneficial insects, **426**; residues of, on apples, **304, 501**; and DDT, **656**; and Tedion, **227**; and thiram, **426**
Leafhopper, Grape (see *Erythroneura variabilis*)
Leaf-roller, Fruit-tree (see *Archips argyrospilus*)
Lebanon, *Eurygaster integriceps* on cereals in, **35, 313**; list of insect parasites and predators of pests in, **205**
Lebanon, Cedar of (see *Cedrus libani*)
Lebaycid (see Fenthion)
Lecanium (see *Eulecanium*)
lecontei, *Agonoderus*; *Neodiprion*
Leeks, *Trioza brassicae* on, in Bulgaria, **190**; *Acrolepia assectella* on, in France, **547**
leguminicola, *Dasyneura*

Leguminivora glycinivorella (on soy bean), in Japan, **572**; in Vietnam, **526**; varietal susceptibility of soy bean to, **572**; distribution and host-plant range of, **44**; sprays against, **527**
Lema melanopa, on cereals in U.S.A., **505**; in other areas, **505**
Lema trilineata, sprays against, on potato in Rhode Island, **571**
Lemon, *Orthorrhinus cylindrirostris* on, in S. Australia, **461**; mites on, in Bulgaria, **394, 676**; *Aceria sheldoni* on, in Greece, **675**; mites on, in Italy, **199, 200, 419**; pests of, in Persia, **331**; *A. sheldoni* on, in S. Rhodesia, **125**; behaviour of crawlers of *Lepidosaphes beckii* on, **480**; *Panonychus citri* reared on, **269**
Lentils, *Bruchus lentis* on, in Algeria, **207**; *Bruchus* spp. infesting, in Sicily, **199**; climatic factors influencing response of, to infestation by *B. lentis*, **207**
lentis, Bruchus
Lenzites trabea, termites attracted to timber infected by, **494**
Lepidosaphes beckii (on *Citrus*), in S. Africa, **480**; in Italy, **208**; in U.S.A., **22, 78, 372, 569, 570**; habits of crawlers of, **480**; effects of cover crops on populations of, **22**; fungus infesting, **570**; parasites of, **78, 372, 569, 570**; insecticides against, **78, 208**
Lepidosaphes gloverii, on *Citrus* in Florida, **22**; favoured by cover-crop cultivation, **22**
lepidosaphes, Aphytis
Leptinotarsa decemlineata (Potato Beetle), in Bulgaria, **323**; in France, **636**; in Germany, **387**; in Holland, **387**; in Italy, **678**; in Maryland, **697**; in Poland, **185, 391, 474, 475, 476**; in Rumania, **320**; in Switzerland, **248**; in U.S.S.R., **643**; world distribution of, **387**; food-plant range of adults of, **43**; question of repellent action of hemp against, **392**; bionomics of, **320, 323**; effects of crowding on feeding and oviposition by, **636**; factors affecting diapause in, **387, 643**; predator of, **474**; tests and uses of insecticides against, **185, 210, 248, 320, 323, 424, 475, 476, 678, 697, 698**; effects of sublethal doses of insecticides on, **475, 476**
Leptoglossus occidentalis, on seed of conifers in N. America, **576**
Leptohylemyia (see *Hylemya*)
Leptomastidea abnormis, parasitising *Planococcus citri* in Italy, **198, 419**
Leptomastix dactylopii, parasitising *Planococcus citri* in California, **419**; introduced into Italy, **419**; bionomics and parasite of, **420**
Leptopius (*Leptops*), species of, on apple in S. Australia, **461**
Leptoterna dolabratus (see *Miris*)
Lepturoides linearis, in Scotland, **536**; zoophagous habits of, **536**
lepturoides, Omophlus
Lespedeza, Euschistus servus on, in Arkansas, **274**
Lethane, toxicity of, to *Dysdercus cingulatus*, **50**
Lettuce, pests of, in England, **302, 559**; pests of, in U.S.A., **6, 79**; aphids transmitting mosaic virus of, **79**; development of *Myzus persicae* on, **302**; in diet for *Melanoplus differentialis*, **501**; toxicity of aldrin to, **559**; trichlorphon residues on, **585**
Leucania loreyi, on sugar-cane in Madagascar, **514**; effects of crowding on larvae of, **672**
Leucania placida, effects of crowding on larvae of, **672**
Leucania separata (see *Pseudaletia*)
leucatella, Recurvaria
Leucophaea maderae, rhythmic activity of, **265**; decay of ^{32}P in, **525**
leucophthalmus, Philaenus
Leucopis (predacious on Coccids), in Italy, **198, 419**; in Saskatchewan, **507**
Leucoptera (species of, on coffee), in Kenya, **536**; insecticides against, **536, 537**; method of rearing, **537**; survey of data on, **668**
Leucoptera caffeina (on coffee), in Kenya, **536**; in Tanganyika, **669**; mortality factors of, **669**
Leucoptera coffeella, auct. (see *L. meyricki*)
Leucoptera coma, bionomics and natural enemies of, on coffee in Congo, **668**; sprays against, **669**
Leucoptera meyricki (on coffee), in Central African Republic, **440**; in Kenya, **536**; in Tanganyika, **669**; mortality factors of, **669**; insecticides against, **440**
Leucoptera scitella, bionomics of, on fruit trees in Italy, **37, 38, 543**; insecticides against, **38, 544**
leucopterae, Elasmus; *Mirax*
leucospoides, Ibalia
leucostoma, Psilopa
lewisi, Brevipalpus
Libya, review of pests of crops and stored products in region of, **701**
Lichnanthe vulpina, on cranberry in Massachusetts, **18**; tests and uses of chlorinated hydrocarbons against, **17, 18**
Lichtenstein, Coleoptera attacking stored logs in, **432**

lichtensteini, *Pityophthorus*
Life Tables, for *Archips argyrospilus*, **2, 222**; for *Pristiphora erichsonii*, **563**
Light, responses of insects to, **239, 553**; wavelength of, in relation to insects, **239, 302**; in cabinet for studying flight patterns of insects, **271**; effects of: on feeding by aphids, **533**; on Coleoptera, **107, 114, 563, 582**; on Lepidoptera, **28, 75, 145, 407, 615**; on oviposition by *Megaselia nigra*, **42**; on virus of *Panonychus citri*, **692**; on infestation of cacao, **114, 118, 119**; on infestation of stored products, **12, 29**; on insecticides, **678, 696** (See also Photoperiod and Ultraviolet Light)
Light-traps, for Coleoptera, **374, 587**; for *Gryllus bimaculatus*, **379**; for Lepidoptera, **18, 48, 66, 81, 87, 127, 239, 287, 307, 359, 413, 442, 453, 472, 480, 500, 523, 526, 610, 617, 657**; factors affecting efficiency of, **472**; ultrasonics used with, **453**; types of light for, **18, 66, 87, 239, 307, 472, 586, 657**; types of, **586, 587, 657**
Lignin Sulphonate, in DDT suspensions, **697**
lignosellus, *Elasmopalpus*
Ligustrum, *Margaronia unionalis* on, in Israel, **479**
Lilies, *Rhizoglyphus echinopus* on bulbs of, in Japan, **617** (See also *Lilium*)
Lilium longiflorum (Easter Lily), aphids on, in Oregon, **99**
Lima Bean Pod Borer (see *Etiella zinckenella*)
Lima Beans, pests of, in U.S.A., **19, 453**; glycosides in relation to selection of, by *Epilachna varivestis*, **575**; effects of, on *Tetranychus telarius*, **96, 583**; *Trichoplusia ni* reared on, **307, 586**; seed treatment of, **453**; effects of insecticides on growth of, **454**
limbata, *Brontispa*
Lime (*Citrus*), *Toxoptera aurantii* on, in India, **176**; *T. citricidus* as vector of tristeza virus of, in Malaya, **314**
Lime (*Tilia*), *Lymantria dispar* on, in U.S.S.R., **70, 71**; question of effects of, on *L. dispar*, **70, 71**
Lime-sulphur, against Coccids, **150, 196, 620**; against Eriophyids, **67, 170, 342, 611, 676**; against Tetranychids, **289, 319, 676**; toxicity of, to plants, **67, 342**; in dormant spray, **150**; in sprays, **67, 170, 196, 289, 319, 342, 611, 620, 676**; timing of applications of, **170**; value of wetting agent with, **170**
Limonius minutus, in Scotland, **536**; phytophagous habits of, **536**
Limonius pectoralis, feeding activity of, in Canada, **282**
Limothrips cerealium, overwintering in pine bark in Britain, **169**; effects of climatic factors on, **169**
Limothrips denticornis, habitats of, overwintering in Britain, **169**
Linaria canadensis texana, *Heliothis* spp. on, in N. Carolina, **358**
Linaria vulgaris, question of introduction of *Calophasia lunula* into Canada for control of, **603**
linarius, *Thrips* (see *T. lini*)
Lindane (see BHC)
Lindorus lophanthae, predacious on Coccids in Italy, **198, 328**
lindquisti, *Nepticula*
linearis, *Atomaria*; *Lepturoides*
lineata, *Celerio*
lineatella, *Anarsia*
lineaticollis, *Antestiopsis*
lineatum, *Trypodendron* (*Xyloterus*)
lineatus, *Sitona*
Linen Bags, effects of, on storage of treated seed, **428**
lineola, *Thymelicus*
lineolaris, *Lygus*
lineolata, *Euscelis*
lineolatus, *Adelphocoris*
lingnanensis, *Aphytis*
lini, *Thrips*
Linolenic Acid, effects of, on *Adoxophyes orana*, **48**
Linseed Oil, effect of, on adult emergence of *Adoxophyes orana*, **48**; as adhesive in seed treatments, **66, 428**
lintneri, *Tyrophagus* (see *T. putrescentiae*)
Liodontomerus indicus sp. n., reared from fennel seeds infested by *Systole albipennis* in India, **257**
Liosomaphis (see *Rhopalosiphum*)
Liothrips oleae, insecticides against, on olive in Italy, **329, 330**
Lipaphis (see *Rhopalosiphum*)
Lipids, relation of, to toxicity of insecticides to *Hypera variabilis*, **368**
Liriomyza, parathion against, on beans in Florida, **502**
Liriomyza brassicae, systemic use of phorate against, on tomato in Florida, **80**
Liriomyza congesta (see *L. trifolii*)
Liriomyza munda, on tomato in California, **22**; question of interbreeding between *L. pictella* and, **22**
Liriomyza pictella (in U.S.A.), on cotton, **495**; on other plants, **22**; insecticides against, **495**; question of interbreeding between *L. munda* and, **22**
Liriomyza pusilla, sprays against, on celery in Florida, **21**

Liriomyza trifolii, on clover and lucerne in Bulgaria, **322**
Lissonota, parasitising *Dioryctria abietella* in Italy, **542**
Listroderes costirostris (*obliquus*), on vegetables, ornamental plants and weeds in Australia, **311, 312**; food-plant range of, in Japan, **614**; bionomics and natural enemies of, **311, 312**; method of rearing, **311**
Litchi chinensis, *Acrocercops cramerella* on, in Formosa, **525**; *Chrysocoris stollii* on, in India, **529**
Lithacodia stygia (see *Japspidia*)
Lithium Chloride, reaction of dimethoate with, **455**
Lithocolletis blancardella, bionomics and parasites of, on apple in Italy, **330**; sprays against, **331**
Lithocolletis cincinnatiella, sprays against, on oak in Connecticut, **76, 77**
Lithocolletis crataegella, on apple in Wisconsin, **43**
Lithocolletis hamadryadella, sprays against, on oak in Connecticut, **76, 77**
Lithocolletis populifoliella, bionomics of, on poplars in Yugoslavia, **325**
littoralis, *Rhyparochromus* (*Aphanus*); *Scaphoideus*; *Stomatomyia*
litura, *Prodenia*
liturata, *Hylemya* (see *H. trichodactyla*)
Liver, in diet for *Ceratomegilla maculata*, **606**
livornica, *Celerio lineata*
Lixophaga diatraeae, parasitising Pyralids in West Indies, **25, 26, 279, 280**
Lizards, destroying *Ceramidia butleri* in Costa Rica, **492**
Lobesia botrana (on vines), in France, **299, 681**; in Italy, **678**; emergence periods of, **681**; sex attractant for, **681**; traps for, **681**; insecticides against **298, 678**
Loblolly Pine (see *Pinus taeda*)
Locusta migratoria, in India, **528**; on sugar-cane in Madagascar, **514**; neuro-endocrine control of growth and moulting in, **408**; toxicity of insecticides to, **528, 621**
Locusta migratoria migratorioides, in Eritrea, **172**; in Nigeria, **387**; history of outbreaks of, **174**; physiology of phase induction in, **172**
Locustana pardalina, factors affecting behaviour of solitary phase of, in S. Africa, **26, 27**
Locusts, in Italy, **195**; outbreaks of, in Venezuela, **296**; varietal susceptibility of maize to, **606**; nutritional requirements of, **485**; physiology of phase induction in, **172**; migratory species of, **440**; natural enemies of, **105, 621**; in book on pests of crops in hot climates, **238**; apparatus for removing corpora allata from, **400**; tests and uses of insecticides against, **195, 347, 440**; bibliography of grasshoppers and, **292** (See also *Chortoicetes*, *Dociostaurus*, *Locusta*, *Locustana*, *Nomadacris*, *Oedaleus*, *Phaulacridium* and *Schistocerca*)
Lodgepole Pine (see *Pinus contorta*)
Loganberry, *Pennisetia marginata* on, in Canada, **595**
Lonchaea zetterstedti, destroying *Trypodendron lineatum* in Czechoslovakia, **252**
longicauda, *Zenillia* (*Phryxe*)
longicaudatus, *Opius*
longicornis, *Diabrotica*; *Haltichella*; *Hyperecteina*; *Scolothrips*
longior, *Tyrophagus*
longipennis, *Lachnosterna*; *Strauzia*
longipilus, *Typhlodromus*
longispinus, *Pseudococcus* (see *P. obscurus*)
Longitarsus, species of, taken in traps in Denmark, **427**; in U.S.S.R., **516**
Longiunguis sacchari (see *Aphis*)
longulus, *Pnigalio* (*Eulophus*)
Lonicera, *Napomyza lonicerella* on, in Italy, **630**
Lonicera xylosteum, *Rhagoletis cerasi* on, in Yugoslavia, **193**
lonicerella, *Napomyza*
lophanthae, *Lindorus* (*Rhizobius*)
Lophoderus gloverana (see *Acleris*)
lophyri, *Olesicampe*
loreyi, *Leucania* (*Cirphis*)
Lotus corniculatus, pests of, in U.S.A., **19, 649**; virus disease of, **649**; insecticide residues on, **19, 267**
Louisiana, cotton pests in, **159, 578**; pests of cereals in, **84, 153**; *Diatraea saccharalis* on sugar-cane in, **163, 501**; study on wild grasses of, as food-plants of *Chloriona orizicola*, **152**; *Diabrotica balteata* on sweet potato in, **156**; *Sitophilus* spp. in, **594**; release of *Trichogramma* sp. against *D. saccharalis* in, **153**
lounsburyi, *Aspidiotiphagus*
LOVO, **210**; effects of, as additive to sprays and dusts, **52, 94, 95**; composition of, **94**
LOVO 190, **52**
LOVO 192, **52**
Loxagrotis albicosta, in Nebraska, **81, 365**; on beans, **365**; bionomics of, on maize, **81**; light-trap catches of, **81**; insecticides against, **81, 365**
Loxococcus, *Carvalhoia arecae* on, in India, **621**

Loxostege similalis, insecticides against, on cotton in Arkansas, **273**
Loxostege sticticalis, on beet in Alberta, **489**; experiments with plant-growth stimulators and, **347**; tests and uses of insecticides against, **489**
Lubia (see *Dolichos lablab*)
lubia, Trialeurodes
lubricipeda, Diacrisia
Lucerne, grasshoppers ovipositing in abandoned fields of, in Argentina, **483**; pests of, in Bulgaria, **188, 321, 322, 417, 476, 477, 553, 676**; pests of, in Canada, **140, 598**; *Macrosiphum pisum* on, in Czechoslovakia, **333, 633**; *Contarinia medicaginis* on, in France, **550**; pests of, in Germany, **100, 131, 427**; *C. medicaginis* on, in Italy, **550**; pests of, in Poland, **184, 252**; mosaic virus of, in Sudan, **650**; pests of in, U.S.A., **7, 19, 22, 88, 98, 148, 151, 156, 157, 162, 165, 244, 266, 267, 268, 274, 275, 306, 352, 364, 368, 406, 487, 497, 500, 582, 584, 585, 588, 654**; pests of, in Yugoslavia, **56, 297**; permeability of cells of, in relation to gall formation by *Jaapiella medicaginis*, **458**; spatial pattern of *Macrosiphum pisum* on, **268**; evaluation of injury by *Sitona hispidulus* to, **156**; factors affecting infestation of, **7, 267, 501**; varietal susceptibility of, to insects, **98, 156, 165, 244, 263, 266, 352, 364**; effect of *M. pisum* on infection of, by *Phoma herbarum medicaginis*, **648**; virus diseases of, **98, 207, 536, 649, 650**; pollinated by *Megachile rotundata*, **23**; effects of cultural measures against pests of, **131, 140, 162, 188, 417**; insecticide residues on, **19, 88, 266, 267, 359**; loss of residues of azinphos-methyl from, **95**; toxicity of azinphos-methyl to, **148**; contamination of, by aerial dusts applied to orchards, **964**
lucifugus, Reticulitermes
lucorum, Carcelia
ludeni, Tetranychus
ludens, Anastrepha
lugens, Nilaparvata; *Roeselia*
lugubris, Carpophilus; *Formica*; *Perotis*
lugubrosa, Lambdina fiscellaria
luigionii, Cleonus (*Conorrhynchus*)
luna, Mymar (*Anaphoidea*) (see *Patasson conotracheli*)
lunalis, Sylepta
lunula, Calophasia
Lupins, *Heliothis armigera* on, in S. Africa, **435**
Lupinus angustifolius, relation of alkaloid content of, to infestation by *Macrosiphum euphorbiae*, **236**
lurida, Suillia (*Helomyza*)
luteolus, Aphycus (*Metaphycus*)
lutescens, Perilissus
lybica, Empoasca
lybicus, Ommatissus binotatus
lycimnia, Coccophagus
Lycium halimifolium, holocyclic overwintering of *Myzus persicae* on, in Austria, **67**
lycopersicella, Keiferia
lycopersici, Aculus (*Vasates*)
Lycopersicum pimpinellifolium, aster-yellows virus not transmitted to, by *Macrosteles fascifrons*, **649**
Lyctus, species of, in timber in Britain, **643**; tests of timber preservatives against, **232**
Lyctus africanus, infesting sapwood veneer, **622**; method of rearing, **622**
Lyctus brunneus, in Australia, **641**; in Britain, **643**; susceptibility of timbers to infestation by, **641, 642**; effects of heat on, **431**; effects of radiation on, **52, 469**; tests of timber preservatives against, **232**; method of rearing, **641**
Lyda hypothrophica (see *Cephalcia abietis*)
Lydella stabulans, parasitising *Hydroecia micacea* in Germany, **280**
Lygidea mendax, on apple in New Brunswick, **662**
Lygocerus, hyperparasite of *Macrosiphum pisum* in Czechoslovakia, **633**
Lygocerus aphidovorus, hyperparasite of *Brevicoryne brassicae* in Holland, **518**
Lygus, on lucerne in Washington, **7**; damage by thrips to safflower attributed to, **658**; sprays against, **7**
Lygus hesperus, sprays against, on *Magnolia* in California, **504**
Lygus lineolaris (in U.S.A.), on apple, **655**; on lucerne, **487**; on tomato, **585**; on vegetables, **487**; resistance of foodplants to, **487**; insecticides against, **585, 655**
Lygus pabulinus, reversion virus of black currant not transmitted by, **342**
Lygus pratensis, seasonal fluctuations of, on clover and lucerne in Poland, **252**
Lygus rubricatus, on spruce in Germany, **464**; new Eriophyid associated with, **464**
Lygus rugulipennis, in Czechoslovakia, **623**; in Poland, **252**; in Sweden, **562**; on beet, **623**; seasonal fluctuations of, on clover and lucerne, **252**; bionomics of, on graminaceous and other plants, **562**; effects of, on oats, **562**; question of relation of, to bollnäs disease, **562**; demeton ineffective against, **623**

Lymantria dispar (on forest trees), in Bulgaria, **465**; in India, **49**; in Minorca, **680**; in U.S.S.R., **70, 71, 74**; in U.S.A., **87, 88, 456, 464, 665**; in Yugoslavia, **36, 56, 57, 193, 249, 327, 348**; bionomics and ecology of, **56, 70, 456, 465**; factors affecting populations of, **75, 464**; effects of infestation by, on growth of oaks, **193**; experiments with plant-growth stimulators and, **347**; isolation and synthesis of sex attractant of, **519**; natural enemies of, **56, 249, 327, 665, 666, 680**; method of rearing parasite on, **249**; virus diseases of, **36, 57, 204, 348, 666**; other mortality factors of, **666**; measures against, **56, 57, 87, 88, 457**; detoxification of DDT in, **57**
lyncus, Cirrospilus
Lypha setifacies, parasitising *Choristoneura pinus* in Wisconsin, **490**
lypriformis, Microlarinus
lythri, Myzus

M

Macadamia ternifolia, Cryptophlebia illepida on, in Hawaii, **498**
mcdanieli, Tetranychus
macfarlanei, Tetranychus
Machilus, resistance of timber of, to attack by termites in China, **100**
Macrocentrus, parasitising *Ceramidia butleri* in Costa Rica, **492**
Macrocentrus ancylivorus, established in Argentina as parasite of *Cydia molesta*, **399**
Macrocentrus homonae, effects of sprays on populations of, parasitising *Homona coffearia* in Ceylon, **619, 673**
Macrocentrus infirmus, parasitising *Hydroecia* in Germany and Switzerland, **280**
Macrocentrus koebelei, **492**
Macrocentrus marginator, parasitising *Aegeria tipuliformis* in Czechoslovakia, **333**
Macronoctua onusta, bionomics of, on iris in Ohio, **504, 652**; relation of, to soft rot, **652**; parasite of, **505**; measures against, **505**
macropilus, Phytoseius
macropterus, Torymus (*Callimome*)
Macrosiphoniella (see *Macrosiphum*)
Macrosiphum, species of, in Switzerland, **471**
Macrosiphum avenae, in Canada, **605, 660**; in Sweden, **563**; in Washington, **652**; on cereals, **605, 660**; virus diseases of cereals transmitted by, **351, 563, 573, 574, 651, 652**; on grasses, **605, 660**; killed by low temperatures, **283**; question of application of insecticides against, **605**
Macrosiphum barri, and virus diseases of melons in U.S.A., **13**
Macrosiphum caraganae, bionomics of, on *Caragana arborescens* in Canada, **567**; not surviving on other leguminous plants, **567**; characters distinguishing *M. pisum* from, **567**
Macrosiphum dirhodum, in Canada, **605, 660**; in Sweden, **563**; in Washington, **652**; on cereals, **605, 660**; transmission of cereal viruses by, **350, 563, 652**; on grasses, **660**; overwintering on *Rosa*-**605**; question of application of insecti, cides against, **605**
Macrosiphum euphorbiae, in Australia, **137**; in Austria, **688**; in Britain, **62**; in New Brunswick, **283, 366**; in Switzerland, **471**; on beet, **62**; relation of alkaloid content of *Lupinus* to infestation by, **236**; on potato, **61, 366, 471, 688**; transmitting virus disease of tomato, **137**; experiments with other food-plants and, **471**; influence of temperature on, **141, 225, 283**; instar-distribution of, **438**; insecticides against, **61, 62, 366**; characters and biological races of, **471**
Macrosiphum granarium (see *M. avenae*)
Macrosiphum malvae, on geraniums in Austria, **67**
Macrosiphum pisum (*pisi*), in Bulgaria, **322**; in Canada, **140, 365**; in Czechoslovakia, **333, 633**; in Germany, **427**; in India, **528**; in U.S.A., **7, 13, 88, 148, 267, 268**; on broad beans, **427**; on clover, **633, 654**; on lucerne, **7, 88, 140, 148, 207, 268, 322, 333, 427, 633**; factors affecting resistance of lucerne to, **263**; effects of, on infection of lucerne by *Phoma herbarum medicaginis*, **648**; and virus diseases of melons, **13**; nasturtium ringspot virus not transmitted by, **528**; on peas, **267, 322, 365, 427**; varietal susceptibility of peas to, **365**; reared on *Caragana arborescens*, **567**; transmission of plant viruses by, **7, 13, 207, 654**; fluctuations in populations of, **268**; natural enemies of, **88, 322, 333, 626, 633**; sampling method for, **268**; effects of antibiotics on, **502**; insecticides against, **7, 89, 140, 148, 267**; effects of Di-Syston on stages of, **267**; favoured by toxaphene, **140**; biotypes of, **365, 427**; characters distinguishing *M. caraganae* from, **567**
Macrosiphum rosae (on rose), in France, **298**; in Italy, **677**; sprays against, **298, 677**

Macrosiphum sanborni, on chrysanthemum in Egypt, **399**
Macrosiphum scoliopi, insecticides against, on lily in Oregon, **99**
Macrosiphum sesbaniae, on broad bean in Sudan, **650**; transmitting virus diseases, **650**
Macrosiphum solani, in Austria, **688**; in Britain, **61**; in New Brunswick, **366**; in New Zealand, **179, 180**; on beet, **62**; on potato, **61, 366, 688**; and virus diseases of potatoes, **180**; seasonal activity of, **179**; traps for, **179**; killed by low temperatures, **283**; insecticides against, **61, 62, 366**
Macrosiphum solanifolii (see *M. euphorbiae*)
Macrosteles, species of, on bluegrass in Kentucky, **163**; dieldrin against, **163**
Macrosteles fascifrons (in U.S.A.), on cereals, **153, 651, 653**; on ornamental plants, **152, 163, 653**; on vegetables, **152, 163, 649, 652**; transmission of plant viruses by, **152, 163, 649, 651, 652, 653**; feeding habits of, **653**; migration of, **152**
Macrosteles laevis, grassland in relation to, in Czechoslovakia, **68, 69**; transmitting virus diseases of plants, **69**
Macrosteles sexnotatus, transmission of *Delphinium* virus by, **536**
macrotibialis, *Bryobia*
maculata, *Ceratomegilla* (*Coleomegilla*); *Cyllenia*; *Desiantha*; *Odinia*; *Theerioaphis*
maculatus, *Callosobruchus*; *Dermestes*
maculicornis, *Aphytis*
maculipennis, *Dichroplus*; *Plutella*
maculipes, *Aphycus*
Madagascar, *Chrysotypus caryophyllae* on clove in, **441**; cotton pests in, **112, 440, 670**; pests of rice in, **441, 442**; pests of sugar-cane in, **233, 234, 441, 513, 514, 515**; virus disease of sugar-cane in, **233, 234**; beneficial insects in, **442, 513, 514**
madens, *Tribolium*
maderae, *Leucophaea*
Magdalis armicollis (on elm), in Quebec, **3**; in Wisconsin, **368**; not significant as vector of *Ceratocystis ulmi*, **368**; parasites of, **4**
Magdalis barbita (on elm), in Quebec, **3**; in Wisconsin, **368**; not significant as vector of *Ceratocystis ulmi*, **368**; parasites of, **4**
Magdalis frontalis, on pines in U.S.S.R., **256**
Magdalis inconspicua, parasites of, on elm in Quebec, **3, 4**
Magicicada septendecim, in apple orchards in New York, **587**; effects of soil treatment with nematocides on emergence of, **587**
Magnolia grandiflora, *Lygus hesperus* on, in California, **504**; toxicity of dimethoate to, **504**
maidis, *Aphis* (*Rhopalosiphum*); *Dalbulus*
Maine, *Panonychus ulmi* on apple in, **493**; forest pests in, **581, 603**; natural enemies and fungus diseases of *Monochamus* in, **603**
Maize, pests of, in Bulgaria, **321, 416**; pests of, in Canada, **2, 439, 591**; *Prodenia litura* on, in Egypt, **30, 31**; pests of, in France, **243, 244, 245**; pests of, in Germany, **202, 292, 434, 557, 685**; pests of, in India, **203, 257, 258**; *Gymnoscelis pumilata* on, in Italy, **544**; *Monolepta australis* on, in New South Wales, **106**; moth-borers on, in Pakistan, **277, 278**; pests of, in Rhodesia, **126**; *Ostrinia nubilalis* on, in Rumania, **318**; pests of, in Sudan, **433**; pests of, in U.S.S.R., **40, 254, 297, 317**; pests of, in U.S.A., **5, 6, 17, 18, 81, 83, 84, 85, 97, 99, 147, 157, 165, 166, 235, 239, 262, 272, 358, 360, 461, 488, 590, 655, 656**; *Spodoptera frugiperda* on, in Venezuela, **605**; pests of, in Vietnam, **526**; pests of, in Yugoslavia, **244, 249, 348, 394**; varietal susceptibility of, to pests, **84, 96, 97, 243, 244, 245, 249, 258, 318, 348, 360, 606**; determination of varietal susceptibility of, **290, 291**; feeding habits of Cicadellids on, **653**; diseases of, in relation to infestation by *Elachiptera cornuta*, **255**; nature of injury by mites to, **147**; in baits for *Gryllotalpa*, **418**; labelled with radioisotopes, **653**; effects of cultural practices on infestation of, **249, 488, 656**; timing of sprays against pests of, **461**; seed treatment of, **394, 416**; systemic activity of phorate in, **17, 18**; ethion residues on, **147**; toxicity of heptachlor to **655**
Maize (Husked), in diet for *Tribolium destructor*, **396**
Maize (Stored), insects in, **99, 125, 462, 501, 622**; effects of, on weight and fecundity of *Sitophilus* spp., **253**; fumigation of, with hydrogen cyanide, **125**
Maize Meal, in baits for *Crambus caliginosellus*, **15**
Maize Oil, influence of, in diet for *Pectinophora gossypiella*, **305**; metabolism of aldrin increased by, **581**
Maize-cob Grits, in baits for ants, **264, 493**

majalis, Amphimallon
major, Datana
malacearum, Pseudococcus (see *P. obscurus*)
Malacosoma, on bitterbrush in Idaho, **580**
Malacosoma alpicola, virus disease of, in Switzerland, **688, 692**
Malacosoma americanum, influence of haemolymph of, on parasite fecundity, **568**
Malacosoma disstria, fluctuations in populations of, on aspen in Ontario, **216**
Malacosoma neustria (on deciduous trees), in Holland, **50**; in U.S.S.R., **72, 73**; parasite of, **72**; use of *Bacillus thuringiensis* against, **50**
Malacosoma pluviale, on deciduous trees in British Columbia, **401**; polyhedrosis virus of, **401**
malaiaensis, Opius longicaudatus
Malaoxon, anticholinesterase activity of, **495**; penetration of integument by, **495**
Malathion, against aphids, **1, 89, 98, 120, 204, 262, 285, 324, 333, 341, 366, 530, 605, 612, 655**; resistance to, in strains of *Therioaphis maculata*, **156**; against Coccids, **5, 103, 181, 182, 620**; against other Hemiptera, **53, 83, 89, 124, 125, 307, 409, 504, 655, 674**; resistance to, in strains of *Erythroneura variabilis*, **24**; against Cecidomyiids, **132, 343, 384, 550**; against Trypetids, **111, 126, 299, 360, 646, 655**; effects of, on mid-gut and nerve ganglia of *Dacus oleae*, **542**; tests and uses of, against other Diptera, **8, 15, 76, 77, 459, 559, 618**; of little value against *Melanagromyza phaseoli*, **29**; susceptibility or resistance to, in strains of *Drosophila melanogaster*, **627**; against Coleoptera, **11, 12, 21, 89, 98, 380, 398, 520, 618, 655, 673**; influence of lipids on susceptibility of *Hypera variabilis* to, **368**; against *Eumegastigmus pistaciae*, **198**; against Lepidoptera, **34, 51, 76, 77, 86, 88, 119, 121, 247, 263, 414, 498, 514, 618, 646, 655**; ineffective against other Lepidoptera, **647, 673**; against grasshoppers and locusts, **83, 528**; ineffective against *Locusta migratoria*, **621**; ineffective against *Gryllotalpa*, **419**; toxicity of, to *Periplaneta americana*, **8**; against *Dolichothrips varipes*, **618**; against Tetranychids, **9, 287, 288, 297, 449, 655, 669**; resistance to, in strains of Tetranychids, **119, 656, 691**; against *Steneotarsonemus* spp., **309, 396**; effects of, on beneficial arthropods, **2, 204, 333**; comparative toxicity of, to arthropods, **155**; penetration of integument by, **495**; anticholinesterase activity of, **494, 542**; mammalian toxicity of, **494**; metabolism of, in rice plants, **617**; effects of, on plants, **258, 396**; development of *Beauveria bassiana* inhibited by, **393**; in baits, **360, 419**; in dusts, **53, 262, 263, 550, 655**; in sprays, **1, 2, 5, 29, 34, 51, 76, 77, 83, 88, 89, 98, 103, 119, 120, 121, 124, 132, 181, 182, 198, 227, 247, 258, 285, 287, 297, 299, 304, 307, 309, 324, 333, 341, 343, 360, 366, 396, 449, 459, 498, 504, 514, 520, 550, 559, 612, 618, 620, 621, 646, 647, 669, 673, 696**; in bait-sprays, **111, 126, 646**; applied from aircraft, **83, 88, 655**; in root dips, **98**; treatment of mushroom beds with, **384**; uses of, against pests of stored products, **11, 12, 21, 304, 398, 673, 696**; question of fumigant action of, **12**; question of systemic activity of, **341**; vapour toxicity of, **498**; residues of, **236, 399, 697**; analysis and determination of, **46, 236, 304**; labelled with ^{35}S, **617**; and *Bacillus thuringiensis*, **674**; and chlorfenson, **2, 449**; and DDT, **5, 53, 198, 409, 550**; and heptachlor, **124**; and methoxy-DDT, **89**; synergistic effect of α-naphthylacetic acid with, **674**; and oil emulsions, **125, 396**; and parathion, **198, 550**; and Tedion, **669**
Malaya, *Toxoptera citricidus* transmitting tristeza virus of *Citrus* in, **314**; insects visiting flowers of rubber in, **288**; *Eretmocerus serius* in, **125**; *Xyleborus compactus* in, **517, 518**
Maleic Hydrazide, bud development of oaks inhibited by, as measure against *Tortrix viridana*, **300**
malella, Stigmella (*Nepticula*)
Mali, outbreaks of *Locusta migratoria migratorioides* in, **174**
mali, Aphelinus; *Dasyneura*; *Empoasca*; *Mediolata*; *Pseudexentera*; *Psylla*; *Anuraphis* (*Sappaphis*) (see *A. plantaginea*)
Maliarpha separatella, on rice in Madagascar, **441, 442**; ecology and bionomics of, **442**; natural enemies of, **442**; measures against, **441, 442**
Maliattha signifera, effects of crowding on larvae of, **672**
malifoliae auct., *Yezabura* (see *Anuraphis plantaginea*)
malinellus, Hyponomeuta padellus
malkini, Doliopygus
Mallow (see *Malva rotundifolia*)
Malpighia punicifolia, Anthonomus on, in Puerto Rico, **573**; persistence of parathion residues in, **573**
Malt Stores, *Trogoderma granarium* in, **388**

Malva, *Syringopais temperatella* on, in Persia, **127**
Malva rotundifolia, *Panonychus* sp. on, in Virginia, **19**
malvae, *Macrosiphum*
Mamestra brassicae, in N. Africa, **408**; in France, **408, 547, 549**; in Germany, **471**; on brussels sprouts, **471**; rot associated with, **471**; factors affecting fecundity, fertility and diapause in, **293, 407**; phase variation in larvae of, **47**; experiments with parasite and, **328**; diseases of, **407, 547, 549**
Mamestra dissimilis (see *Hadena suasa*)
Maneb, in mixed sprays against *Phyllocoptruta oleivora*, **371**; tolerated by predacious mites, **491**
Manganous Benzothiazylmercaptide, in Niacide M (*q.v.*), **493**
Manganous Dimethyldithiocarbamate, in Niacide M (*q.v.*), **493**
Manganous Sulphate, influence of, on diapause in *Leptinotarsa decemlineata*, **644**
Mangel, aphids and virus diseases of, in Britain, **535**
mangiferae, *Aulacaspis* (see *A. tubercularis*); *Sternochetus* (*Cryptorhynchus*)
Mango, *Aulacaspis tubercularis* on, in Africa and Middle East, **230**; pests of, in India, **230, 258, 415**; pests of, in Mexico, **500, 582, 587**; *Monolepta australis* on, in New South Wales, **106**; pests of, in Vietnam, **526**; fumigation of fruit of, **500, 582**
manicatus, *Chirothrips*
Manitoba, pests of cereals and grasses in, **2, 572, 660**; virus disease of wheat in, **651**; forest pests in, **143, 144, 216, 594, 601**; *Macrosiphum caraganae* on *Caragana* in, **567**; new species of *Cinara* on *Juniperus horizontalis* in, **702**; *Strauzia longipennis* on sunflower in, **140**; wireworms in, **282**; pests of stored grain in, **218**
manitobensis, *Cinara*
manubrialis, *Hypogastrura*
Maple (see *Acer*)
Maple, Sugar (see *Acer saccharum*)
Maps, of distribution of pests, **212, 389**
marantica, *Epicampoptera* (see *E. strandi*)
Marasmia trapezalis, on sugar-cane in Madagascar, **514**
Marasmia poeyalis, on grasses, **270**; misidentified as *M. venilialis*, **270**
Marasmia venilialis, in Australia, **270**; other Pyralids misidentified as, **270**
Margaronia unionalis, bionomics of, on oleaceous plants in Israel, **479**; natural enemies of, **479**
marginata, *Pennisetia* (*Bembecia*)
marginator, *Macrocentrus*
marginemtorquens, *Rhabdophaga*
Marie-Galante, sugar-cane pests in, **513**
Marietta carnesi, hyperparasite of *Chrysomphalus bifasciculatus* in Japan, **225**
Maritime Pine (see *Pinus pinaster*)
maritimus, *Pseudococcus*
Marmara, on cacao in Ghana, **116**
marmorator, *Monochamus*
maroccanus, *Dociostaurus*
Marrow-stem Kale (see Kale)
Martinique, sugar-cane pests in, **513**
Maruca testulalis, sprays against, on *Cajanus* in Ceylon, **618**
Maryland, *Epilachna varivestis* on lima beans in, **453**; lucerne pests in, **88**; occurrence of *Cyrtepistomus castaneus* in fields of leguminous forage plants in, **584**; maize pests in, **85, 157, 461**; potato pests in, **697**; *Myzus persicae* on tobacco, **81**; *Rhyacionia buoliana* on pines in, **166**; *Tetranychus telarius* on roses in, **491**; other *Tetranychus* spp. in, **366**; natural enemies of pests in, **166, 491**; analysis of phosphamidon residues on crops in, **266**
mascarensis, *Xyleborus* (see *X. affinis*)
Mason Jars, as traps for earwigs, **165**
Massachusetts, pests of cranberry in, **18**; pests of forage crops in, **19**; Coleoptera infesting pine logs in, **168**
materiarius, *Gnathotrichus*
Mat-grass (see *Cyperus segetum*)
Matricaria chamomilla, *Nysius minor* on, in Jammu, **620**
matritensis, *Azotus*
Matutinus, **380**
maura, *Eurygaster*
mauritanicus, *Tenebroides*
mauritia, *Spodoptera*
Mauritius, *Aulacaspis tubercularis* on mango in, **230**; sugar-cane pests in, **276, 640**; *Brontispa limbata* on palms in, **457**; attempted introduction of parasites of *Proceras sacchariphagus* into, **276**
Mayetiola destructor (on cereals), in Bulgaria, **392, 416**; in Sweden, **561**; in U.S.A., **91, 516**; factors affecting infestation by, **91, 392**; insecticides against, **298, 416**; races of, **516**
MC-47, in sprays against *Tetranychus ludeni*, **541**; beneficial mites unharmed by, **2**; definition of, **2**
Meat, in diet for *Ceratomegilla maculata*, **606**
Meat Extract, treatment of packaging materials for, against Coleoptera, **232**
Mecarbam, as plant dip against *Coccus hesperidum*, **293**

Mecedanum giganteum, predacious on *Trachyostus aterrimus* in Ghana, **376**
Mecedanum sexualis, predacious on *Doliopygus dubius* in Ghana, **373**
mechowi, *Bolbocephalus*
medicaginis, *Contarinia*; *Jaapiella*
Medicago hispida, *Macrosteles fascifrons* transmitting aster-yellows virus to, in California, **649**
Medicago sativa (see Lucerne)
Mediolata mali (predacious on Tetranychoid mites), in Austria, **65**; in Quebec, **2**; bionomics of, **65**; effects of sprays on populations of, **2**, **65**
mediterraneus, *Pnigalio*
megacephala, *Pheidole*
Megachile rotundata, bionomics of, pollinating lucerne in U.S.A., **23**
Megadelphax sordidula, in Finland, **471**, **516**; on wheat, **471**; natural enemies, of **471**, **516**
Megaselia, parasitising *Monochamus* spp. in Maine, **603**
Megaselia bovista, bionomics of, on mushrooms in Britain, **42**; characters of stages of, **42**
Megaselia halterata, bionomics of, on mushrooms in Britain, **42**; screening of doors against, **42**; characters of stages of, **42**
Megaselia nigra, bionomics of, on mushrooms in Britain, **42**; characters of stages of, **42**
megaspila, *Brachymeria*
Megastigmus pistaciae (see *Eumegastigmus*)
Megastigmus schimitscheki, infesting cones of cedar of Lebanon in Turkey, **430**; characters of, **430**
Megastigmus spermotrophus, on Douglas fir in Idaho, **577**
megatoma, *Attagenus*
Megilla fuscilabris (see *Ceratomegilla*)
Megoura viciae, excretion of phosphate by, **525**
Melanagromyza, on soy bean in Japan, **613**; effects of cultural practices on populations of, **613**
Melanagromyza obtusa, sprays against, on *Cajanus* in Ceylon, **618**
Melanagromyza phaseoli, on beans in Egypt, **29**; on other legumes in India, **532**; bionomics and adult habits of, **532**; insecticides against, **29**
Melanagromyza sojae, insecticides against, on soy bean in Formosa, **161**
melanaria, *Feronia* (*Pterostichus*)
melanarius, *Iphiaulax*
melanocerus, *Anthocoris*
melanogaster, *Drosophila*; *Tersilochus*
Melanolophia imitata (on conifers), in Canada, **223**, **506**; in U.S.A., **223**; bionomics of, **224**; *Bacillus thuringiensis* against, **506**
melanoneura, *Psylla*
melanopa, *Lema* (*Oulema*)
Melanophila cyanea, on pines in Germany, **464**
Melanoplus, on bluegrass in Kentucky, **163**; insecticides against, **163**
Melanoplus bilituratus, in Canada, **511**, **604**; damaging grasslands, **604**; food-plant preferences of, **511**, **604**; flight habits of, **483**; parasite of, **596**
Melanoplus bivittatus, flight habits of, **483**
Melanoplus differentialis, on lucerne in U.S.A., **500**; food-plant requirements of, **500**; decay of ^{32}P in, **524**
Melanoplus femurrubrum, decay of ^{32}P in, **524**
melanura, *Nacerdes*
Melcha ornatipennis (see *Goryphus*)
Melichares dentriticus, predacious on *Tyrophagus putrescentiae*, **282**; factors affecting development and fecundity of, **282**, **449**
Melichares keegani, recorded from stored wheat in Saskatchewan, **221**
Meligethes aeneus, trap-catches of, in Denmark, **427**
Meligethes subfumatus, insecticides against, on lavender in France, **246**
Meligethes viridescens, trap-catches of, in Denmark, **427**
Melilotus, *Macrosteles fascifrons* transmitting aster-yellows virus to species of, in California, **649**
Melilotus alba, experiments on transmission of mosaic viruses to, by aphids in Washington, **7**
Melilotus officinalis, *Sitona lineatus* on, in Finland, **470**
Melilotus indica, experiments on transmission of mosaic viruses to, by aphids in Washington, **7**
melinus, *Aphytis*
Melissopus (see *Cydia*)
Melittomma insulare, map of distribution of, **212**
mellea, *Doddiana*
mellonella, *Galleria*
Meloboris velox, parasitising *Sesamia cretica* in Yugoslavia, **394**
Melolontha hippocastani, distribution of, in Austria, **473**; review of distribution of, in U.S.S.R., **107**; factors affecting adult activity of, **107**; flight years of, **473**
Melolontha melolontha, distribution of, in Austria, **473**; in Denmark, **398**; in France, **194**, **205**, **552**; in Germany,

299; in Switzerland, 482; infesting beet, 398; flight and orientation of, 552, 639, 681; flight years of, 473; structure and permeability of cuticle of larva of, 292; diseases of, 205, 482; parasites of, 194; tests and uses of insecticides against, 299, 398
Melon, *Myiopardalis pardalina* on, in Israel, 296; pests of, in U.S.A., 13, 14, 22; virus diseases of, 13, 650
memnon, *Caligo*
Menazon, against aphids, 141, 208, 209, 596, 670; toxicity of, to *Choristoneura fumiferana*, 592; against *Tetranychus telarius*, 669; toxicity of, to fish, 592; in sprays, 596, 669; tests of systemic activity of, 141, 209, 592; properties and action of, 208
mendacella, *Dioryctria*
mendax, *Lygidea*
mendicus, *Cleonus* (*Temnorhinus*)
Meniscus agnatus (see *Lampronota nitida*)
Mentha aquatica, *Plusia chalcites* reared on, 58
menthastri, *Spilosoma* (see *Diacrisia lubricipeda*)
Mercaptophos (see Demeton)
mercator, *Oryzaephilus*
Mercury, in seed treatments with BHC against wireworms, 394
merkeri, *Chermes* (*Dreyfusia*)
Mermis, parasitising *Diparopsis watersi* in Chad, 205
Mermithids, parasitising insects, 205, 277, 296, 406
Merodon equestris, soil treatment with aldrin against, on narcissus in Washington, 16
Meromyza saltatrix, on cereals in Sweden, 560
Mesocoelus, parasitising *Acrocercops prosacta* in Fiji, 121; effect of dieldrin sprays on populations of, 121
Mesocoelus acrocercopsis, 121
Mesohomotoma tessmani, on cacao in W. Africa, 117
Meso-inositol (see Myo-inositol)
Mesomorphus villiger, bionomics of, on tobacco in India, 675
Mesopolobus aequus, predacious on Delphacids in Finland, 471
Mesopolobus graminum, in Finland, 470; question of prey of, 470
messoria, *Euxoa*
Metagonistylum minense (parasitising Pyralids), in Mexico, 26; in Venezuela, 660; in West Indies, 26, 279
Metamasius hemipterus, on sugar-cane in Grenada, 279
Metaphycus (see *Aphycus*)
Metarbela rava, on cacao in Ghana, 116; favoured by dieldrin, 116
Metarrhizium anisopliae, isolated from *Sitona* spp. in New Hampshire, 351
Metasystox (see Methyl-demeton)
Metasystox (i) (see Methyl-demeton-S)
Metasystox-50 (see Methyl-demeton)
Meta-Systox-R (see O,O-Dimethyl S-2-(Ethylsulphinyl)ethyl Phosphorothioate)
Metatetranychus ulmi (*pilosus*) (see *Panonychus*)
Meteorus, species of, parasitising larvae of *Malacosoma neustria* in U.S.S.R., 72
Meteorus hyphantriae, parasitising *Thymelicus lineola* in Ontario, 568
Meteorus laphygmae, parasitising *Ceramidia butleri* in Costa Rica, 492
Meteorus versicolor, bionomics of, parasitising larvae of *Malacosoma neustria* in U.S.S.R., 72
Methoxy-DDT (Methoxychlor), against aphids, 89, 390; against other Hemiptera, 89, 148, 503; against *Rhagoletis cerasi*, 132; ineffective against *Ceratitis* spp., 111; against Coleoptera, 11, 12, 88, 89, 520; against Lepidoptera, 266, 390, 577, 646; ineffective against *Phthorimaea operculella*, 137; against *Thrips tabaci*, 390; resistance to, in strain of *Typhlodromus fallacis*, 490; beneficial insects unharmed by, 88; comparative toxicity of, to arthropods, 155; effects of, on germination of vetch seed, 98; in aerosols, 132, 133; in sprays, 19, 88, 89, 137, 148, 266, 267, 390, 503, 520, 577, 646; in bait-sprays, 111; applied from aircraft, 88, 132; factors affecting persistence of deposits of, 577; in dips for garlic bulbs, 288; uses of, against pests of stored products, 11, 12, 288; residues of, on plants, 133, 267; residues of, in eggs and tissues of fowls, 8, 9; and malathion, 89
2-Methoxyethanol, reaction of dimethoate with, 455
O-(2-Methoxyethyl) O-Methylcarbamoylmethyl Phosphorothioate, mammalian toxicity of, as metabolite of dimethoate, 455
N-(α-Methylacetonitrile) morpholine, fumigant action of, against Coleoptera, 167
Methyl Bromide (as fumigant), against *Dacus dorsalis*, 490; against *Tyrophagus putrescentiae* in mushroom culture chambers, 453; against pests of stored products, 62, 85, 89, 113, 361, 371, 554, 617, 637, 673; effects of, on plants, 89, 258, 359; sorption of, by cereals, 85, 92, 93; residues of, in stored grain,

455; residues of, in milk and blood of cattle, 455; analysis of bromine residues of, 92
O-Methyl O-4-tert.-Butyl-2-chlorophenyl Methylphosphoramidate, against Coleoptera in stored sorghum, 12; absorption and metabolism of, by arthropods, 148; labelled with ^{32}P, 148
Methyl Cellulose, as adhesive for seed treatments, 698
Methyl-demeton, against aphids, 57, 61, 120, 129, 204, 242, 285, 298, 324, 341, 397, 428, 475, 586, 612; against Coccids, 103, 293; against other Hemiptera, 234, 622; against Diptera, 52, 132, 343; against Lepidoptera, 234, 441; against Thysanoptera, 242, 436, 541; against mites, 113, 185, 207, 285, 290, 297, 309, 341, 342, 436, 541, 552, 669; effects of, on beneficial insects, 104, 204; hazards in use of, 52; in aerosols, 324; bands treated with, 103; in sprays, 52, 57, 61, 103, 116, 120, 129, 132, 185, 204, 234, 242, 285, 290, 297, 298, 309, 324, 343, 397, 428, 475, 541, 552, 586, 612, 669; applied from aircraft, 129; as plant dip, 293; tests of systemic activity and other methods of application of, 116, 120, 242, 341, 342, 397, 436, 441, 702
Methyl-demeton-O, against *Coccus hesperidum*, 293; resistance to, in strains of *Tetranychus telarius*, 691; toxicity of, to *Zantedeschia*, 293; in sprays, 293; as plant dip, 293
Methyl-demeton-S, against aphids, 186, 242; against *Coccus hesperidum*, 293; in sprays, 186, 242; as plant dip, 293; systemic activity of, 242
Methyl-demeton-S Sulphoxide (see O,O-Dimethyl S-2-(Ethylsulphinyl)ethyl Phosphorothioate)
O-Methyl O-2,4-Dichlorophenyl Methylphosphonothioate, in dusts against *Heliothis zea*, 263
N-Methyl (O,O-Dimethylthiolophosphoryl)-5-thia-3-methyl-2-valeramide (see O,O-Dimethyl S-2-(1-Methylcarbamoylethylthio)ethyl Phosphorothioate)
Methyl 1,1-Ethoxycarbonylmethyl-2,2-dichloro-1,3-propylene Phosphate, in sprays against *Dacus oleae*, 128
Methyl-ethyl Methylcarbamoylmethyl Phosphorodithioate, against *Dacus oleae*, 420, 632; against *Leucoptera scitella*, 544; in dusts, 420; in sprays, 420, 544, 632; residues of, in olive oil, 632
Methyl Formate, in mixtures with other fumigants against Coleoptera infesting stored grain, 13
2-(1-Methyl-n-heptyl)-4,6-dinitrophenyl Crotonate (see Dinocap)
Methyl p-Hydroxybenzoate, as fungicide in diets for insects, 150, 586
O-Methyl S-Methyl O-3-Methyl-4-methylsulphinylphenyl Phosphorothioate, as metabolite of fenthion, 696
O-Methyl S-Methyl O-3-Methyl-4-methylthiophenyl Phosphorothioate, as metabolite of fenthion, 696
3-Methyl-4-methylthiophenyl Methylcarbamate, in dusts against *Heliothis zea*, 263
O-Methyl O-p-Nitrophenyl Phosphorothioic Acid, as metabolite of methyl-parathion, 617
Methyl Paraben (see Methyl p-Hydroxybenzoate)
Methyl-parathion, against Curculionids, 57, 86, 156, 159, 337, 497; against other Coleoptera, 191, 447, 553; against Lepidoptera, 87, 298, 489, 490, 536, 537, 546; against *Piesma*, 391; against *Gryllotalpa*, 419; against thrips, 12; against mites, 319, 676; effects of, on germination of vetch seed, 98; metabolism of, in rice plants, 617; development of *Beauveria bassiana* inhibited by, 393; hazards in use of, 489, 536; in baits, 419; in dusts, 57, 298, 337, 391, 447, 553; in granules, 156, 157; in sprays, 12, 86, 87, 191, 267, 319, 489, 490, 497, 536, 537, 546, 676; residues of, on forage crops, 267; labelled with ^{35}S, 617; and bordeaux mixture, 676; and DDT, 12; and dimeton, 393; and Shell SD-4402, 12
3-Methyl-5-pyrazolyl Dimethylcarbamate, susceptibility or resistance to, in strains of *Drosophila melanogaster*, 627
4-Methylthio-3,5-xylyl Methylcarbamate, tests of systemic activity of, against *Aphis pomi*, 141; against *Aculus schlechtendali*, 82
O-Methyl O-2,4,5-Trichlorphenyl n-Butylphosphoramidothioate, tests of toxicity of, to insects, 521
O-Methyl O-2,4,5-Trichlorophenyl Ethylphosphoramidothioate, tests of toxicity of, to insects, 521
O-Methyl O-2,4,5-Trichlorophenyl Isobutylphosphoramidothioate, tests of toxicity of, to insects, 521
O-Methyl O-2,4,5-Trichlorophenyl Isopropylphosphoramidothioate, tests of toxicity of, to insects, 521
O-Methyl O-2,4,5-Trichlorophenyl Phosphoramidothioate, tests of toxicity of, to insects, 521

O-Methyl O-2,4,5-Trichlorophenyl n-Propylphosphoramidothioate, tests of toxicity of, to insects, **521**
Methyl Trithion (see O,O-Dimethyl S-p-Chlorophenylthiomethyl Phosphorodithioate)
3,4-Methylenedioxyphenyl Synergists, chromatographic identification of, **460**; with allethrin, **460**; with pyrethrins, **436, 460**
4-(3,4-Methylenedioxyphenyl)-5-methyl-1-3-dioxane, as synergist with pyrethrins, **436**
metopina, Hyperecteina
Metopolophium dirhodum (see *Macrosiphum*)
Metrosideros robusta, new Cecidomyiid on, in New Zealand, **703**
Mevinphos, against Coleoptera, **88, 98, 380, 458**; against Diptera, **197, 343, 459, 559**; against Hemiptera, **148, 262, 307, 331, 423**; resistance to, in strains of *Therioaphis maculata*, **156**; against Lepidoptera, **151, 165, 246, 440, 441, 442, 514, 526, 581**; ineffective against *Prays oleellus*, **321**; hatching of eggs of *Ostrinia nubilalis* inhibited by, **82**; in relation to sampling of *Tortrix* larvae on oaks, **385**; against mites, **11, 290, 309, 331, 341, 552**; effects of, on beneficial arthropods, **2, 423, 497**; comparative toxicity of, to arthropods, **155**; effects of, on germination of vetch seed, **98**; in dusts, **197, 262**; in sprays, **88, 98, 148, 151, 165, 197, 246, 290, 307, 309, 321, 331, 343, 423, 440, 442, 458, 459, 497, 514, 526, 552, 559, 581**; tests of systemic action and other methods of application of, **11, 342, 385, 441**; survey of data on, **298**
Mexico, *Citrus* pests in, **124, 125, 272, 500, 582**; pests of mango in, **500, 582, 587**; pests of sugar-cane in, **109**; *Leptoglossus occidentalis* damaging seed of conifers in, **576**; beneficial insects in, **78, 124, 125**
meyricki, Leucoptera
micacea, Hydroecia
micans, Dendroctonus
Michigan, *Ostrinia nubilalis* on *Capsicum* in, **81**; *Lema melanopa* on cereals in, **505**; pests of pines in, **24, 84, 147, 452, 506**; parasite of *Rhyacionia buoliana* in, **506**; DDT residues on forage crops in, **656**
Microbracon (see *Bracon*)
Microcerotermes diversus, on date palm in Iraq, **540**
Micrococcus, in *Pseudaletia unipuncta*, **402**
Microctonus, parasitising stages of *Haltica corni* in Ontario, **586**
Microdiprion pallipes, on pines in Austria, **474**
Microgaster, parasitising *Ceramidia butleri* in Costa Rica, **492**
Microlarinus, species of, on weeds in India, **456**; introduced into U.S.A. for control of *Tribulus terrestris*, **456, 495**; bionomics and world distribution of, **496**
Micronesia, parts of a work on insects of, **703**
microphagus, Apterencyrtus
Microphanurus (see *Asolcus*)
Microphthalma europaea, parasitising Lamellicorn larvae in France, **194, 195**; introduced into New York, **195**
Micro-pipette, for topical application of insecticides, **138**
Microtermes thoracalis, on groundnut in Sudan, **433**
Microterys claripennis, parasitising *Eulecanium coryli* in Saskatchewan, **507**
Middle East, Pentatomids on cereals in, **313, 314, 519** (See also individual countries)
Migdolus morretesi, on sugar-cane in Brazil, **446**; toxicity of insecticides to, **447**
migratoria, Locusta
migratorioides, Locusta migratoria
Milk, insecticide residues in, **44, 88, 454, 455, 460, 489, 521**
Milk Products, attractiveness of, to *Trogoderma inclusum*, **268**
Millepedes, damaging cotton in Madagascar, **670**; in Sudan, **433**; as pests of crops in warm climates, **238**
milleri, Evagora
Millet (see *Pennisetum* and Sorghum)
Milo (see Sorghum)
Miltotrogus, species of, in Yugoslavia, **325**; *Rhizotrogus* considered distinct from, **325**
Mindarus abietinus, on forest trees in Canada and U.S.A., **270**; beneficial insects associated with, **270**; sprays against, **271**
minense, Metagonistylum
minerva, Draeculacephala
minima, Carulaspis
Minnesota, *Pieris rapae* on cabbage, **414**; *Empoasca fabae* on potato in, **571**; *Ostrinia nubilalis* on maize in, **489, 656**; *Macrosteles fascifrons* as vector of virus disease of oats in, **651**; pests of conifers in, **12, 24, 97, 492**
minor, Kalotermes; *Nysius*
Mint, Water (see *Mentha aquatica*)
minuscula, Phytomyza
minuta, Hoplocampa
minutissimum, Pachyneuron

minutum, Trichogramma
minutus, Laemophloeus (see *Cryptolestes pusillus*); *Lathridius*; *Limonius*; *Orius*
mirabilis, Cyrtomenus
Miramella alpina (see *Podisma*)
Mirax leucopterae, parasitising *Leucoptera coma* in Congo, **668**; effect of endrin on populations of, **668**
Mirex, in baits for ants, **264, 493**
Miris dolabratus (on grasses), in Bavaria, **335**; in Kentucky, **152, 163**; relation of, to silver top and white ear, **152, 335**; bionomics of, **163**; feeding habits of, **335**; insecticides against, **163**
miriscis, Ectomyelois (*Myelois*)
Mississippi, cotton pests in, **12, 97, 579**; *Pyroderces rileyi* on maize in, **84**; *Solenopsis saevissima richteri* in, **164, 264**
Missouri, natural enemies and virus disease of *Argyrotaenia velutinana* on apple in, **657**; *Ostrinia nubilalis* on maize in, **235, 656**
mitchelli, Allothrombium
Mite, Citrus Rust (see *Phyllocoptruta oleivora*)
Mite, European Red (see *Panonychus ulmi*)
Mite, Texas Citrus (see *Eutetranychus banksi*)
Mites, in granaries in Canada, **218**; on cultivated plants in France, **422**; in Italy, **39, 200**; in stored medicinal herbs in Poland, **183**; as pests of crops in Turkey, **50**; on cotton in Uganda, **534**; on sugar-cane in Venezuela, **285**; as pests of crops in warm climates, **238**; infesting mushroom-spawn cultures, **453**; and virus diseases of plants, **13, 275**; associated with stored products, **173, 183, 184, 218, 411, 466**; infesting honey bees, **589, 590**; review of bionomics of, **177**; diapause in, **386**; factors affecting populations of, **22, 138, 206, 236, 600**; effects of food-plant condition on fecundity of, **583**; natural enemies of, **2, 3, 12, 32, 42, 65, 133, 134, 143, 177, 200, 235, 282, 296, 297, 372, 439, 449, 490, 491, 534, 565, 624, 690**; review of Coccinellids in relation to biological control of, **58**; predacious species of, **2, 24, 32, 42, 65, 143, 181, 183, 187, 252, 282, 296, 328, 372, 439, 449, 459, 490, 491, 511, 534, 600, 603, 624, 690**; effects of insecticides on populations of, **60, 65, 119, 133, 177, 247, 273, 297, 340, 565**; toxicity of mevinphos to, **331**; reduced-pressure application of acaricides against, **164**; resistance to acaricides in strains of, **303, 400, 490, 491, 495, 496, 590, 613, 635, 655, 691**; method for testing acaricides against, **103**; adhesives for holding, on glass plates, **43**; estimation of populations of, **506**; collecting and sampling methods for, **139, 367**; cage for, **139**; method of rearing, **600**; relations between species of, **214, 600, 699**; hybridisation between species of, **20**; classification and new species of, **235, 328, 372, 459, 464, 560, 562, 572, 625, 688, 699**; (Eriophyid), of Poland, **235**; (Phytoseiid), revision of, **372**
Mitox (see Chlorbenside)
Mocis repanda, on groundnut in Brazil, **446**
modesta, Teleia
molesta, Cydia (*Grapholitha*)
molitor, Tenebrio
Monarthropalpus buxi, sprays against, on box in Connecticut, **76**
Mongolia, pests of conifers in, **254, 255**; predator of *Ips subelongatus* in, **254**
Monital, containing nicotine (*q.v.*), **544**
monoceros, Oryctes
Monocesta coryli (Larger Elm Leaf Beetle), bionomics of, in U.S.A., **292**
Monochamus, infesting pine logs in Massachusetts, **168**; treatment of logs against, **168**
Monochamus carolinensis, natural enemies and disease of, on conifers in Maine, **603**
Monochamus marmorator (in U.S.A.), on conifers, **603**; secondary infestation of pulpwood by, **12**; natural enemies and diseases of, **603**
Monochamus notatus (in U.S.A.), on conifers, **603**; secondary infestation of pulpwood by, **12**; natural enemies and diseases of, **603**
Monochamus scutellatus (in U.S.A.), on conifers, **603**; secondary infestation of pulpwood by, **12**; natural enemies and diseases of, **577, 603**
Monochamus urussovii, on firs in U.S.S.R., **255**; relation of *Xylechinus pilosus* to, **255**
Monoctonus crepidis (parasitising aphids), in Canada, **568**; world distribution of, **568**
monohammi, Eutheresia
Monolepta australis, adult habits of, on fruits, vegetables, maize and other plants in New South Wales, **106**; insecticides against, **106**
Monomorium pharaonis, trichlorphon spray against, infesting hospital buildings in Germany, **334**
Monorthochaeta nigra, parasitising *Cassida deflorata* in France, **339**

monospila, Nythobia (*Angitia*)
Montana, *Cephus cinctus* on wheat in, **157**; forest pests in, **215, 581**; migration of *Macrosteles fascifrons* to, **152**
Monterey Pine (see *Pinus radiata*)
monticolae, Dendroctonus (see *D. ponderosae*)
montrouzieri, Cryptolaemus
Moratorvirus lamellicornium, **205**
mori, Bombyx
morio, Colopterus (*Colastus*); *Tiphia*
Mormoniella vitripennis (see *Nasonia*)
Morocco, cotton pests in, **113**; *Saissetia oleae* on olive and other plants in, **104**; *Eurygaster maura* in, **314**
Morphothion, in dusts against Hemiptera, **186, 391**; toxicity of, to *Tetranychus telarius*, **9**
morretesi, Migdolus
morstatti, Xyleborus (see *X. compactus*)
moruliferus, Rhizoecus (see *R. falcifer*)
Morus, Typhlodromus setubali found on, in Spain, **625** (See also Mulberry)
mosellana, Sitodoplosis
Mosquitos, genetics of, **177** (See also *Aedes* and *Culex*)
moultoni, Frankliniella (see *F. occidentalis*)
Mozambique, *Earias biplaga* in, **289**
Mugho Pine (see *Pinus mugo*)
muiri, Dicranotropis
Mulberry, *Diacrisia imparilis* on, in Japan, **412**; *Hyphantria cunea* on, in Yugoslavia, **129, 130** (See also *Morus*)
Mullein (see *Verbascum thapsus*)
multisetis, Tetranychus
multistriatus, Scolytus
munda, Liriomyza
Mungo Beans (see *Phaseolus mungo*)
Murgantia histrionica, bionomics of, on crucifers in U.S.A., **268**
muriceus, Phyrdenus
murina, Buphonella
Musa, transmission of banana virus to species of, by aphids, **650** (See also Banana)
Musca domestica (House-fly), used in tests of insecticides, **8, 51, 154, 155, 171, 299, 355, 521**; use of, in bioassay of insecticides, **521**; resistance or susceptibility to dieldrin in strains of, **524**; effects of insecticides on enzymes of, **154, 155, 494**; absorption and detoxification of Ruelene by, **149**; effects of γ-radiation on, **525**
Muscardine Fungus, Yellow (see *Isaria farinosa*)
Mushrooms, Diptera on, in Britain, **42, 384**; pests of, in Bulgaria, **322**; bacteria associated with *Heteropeza pygmaea* on, **384**; insecticide treatments of casing materials for, **384**; toxicity of insecticides to, **384**; (dried), *Tyrophagus putrescentiae* infesting, **184**
Mushroom-spawn Cultures, measures against *Tyrophagus putrescentiae* infesting, **453**
Mussidia nigrivenella, in stored products in Britain, **537**; larval characters of, **537**
Mustard (see *Sinapis alba*)
Mustard-oil Glucosides, rôle of, in food-plant selection by aphids and Lepidoptera, **532**
mutatella, Dioryctria
Myelois ceratoniae, decolor and *miriscis* (see *Ectomyelois*)
Myelois transitella (see *Paramyelois*)
Myelophilus piniperda (on pines), in Czechoslovakia, **70**; in Finland, **463**; in France, **59, 680**; in Norway, **345**; in Poland, **465**; in Spain, **679**; in U.S.S.R., **256**; effects of, on timber increment, **465**; experiments on attractiveness of terpenes of *Pinus pinaster* to, **59**; destroyed by *Acanthocinus aedilis*, **463**; treatments of timber against, **345**
Myiopardalis pardalina, bionomics of, on cucurbits in Israel, **296**
Myiophagus, infesting *Lepidosaphes beckii* in Florida, **570**
Mylabris pustulata, sprays against, on *Cajanus* in Ceylon, **618**
Mylar, use of labels covered with, for sampling of spray deposits, **271**
Mymar luna (see *Patasson conotracheli*)
Myo-inositol, in diet for *Anthonomus grandis*, **497**
myopaeformis, Aegeria (*Synanthedon*); *Tetanops*
myrmeleon, Eulophonotus
Myrobalan Plum (see *Prunus cerasifera*)
mytilaspidis, Aphytis
Mytilococcus beckii (see *Lepidosaphes*)
Myzocallis walshii, bionomics of, on red oak in British Columbia, **450**; Di-Syston against, **450**
Myzodes persicae (see *Myzus*)
Myzus, world distribution of *Monoctonus crepidis* parasitising species of, **568**
Myzus ascalonicus, on violet in Austria, **67**; in beet clamps in Britain, **62**; on swede in Denmark, **344**; on onions in Germany, **433**; methyl-bromide fumigation against, **62**
Myzus cerasi, parasite of, in Czechoslovakia, **480**
Myzus circumflexus, toxic effect of, on cacao in Costa Rica, **520**
Myzus humuli, bionomics and natural enemies of, on hops in Bulgaria, **324**;

winter food-plants of, **324**; insecticides against, **324**
Myzus lythri, killed by low temperatures, **283**
Myzus ornatus, in New Brunswick, **283**; cold-hardiness of, **283**
Myzus persicae, in Austria, **67, 688**; in Britain, **61, 62, 124, 302, 385, 535, 538**; in Costa Rica, **647**; in Czechoslovakia, **623**; in Denmark, **344, 426**; in Formosa, **612**; in Germany, **101, 242, 355, 356, 428**; in Hawaii, **364**; in Holland, **397, 518**; in Hungary, **57, 58**; in India, **258, 528**; in New Brunswick, **283, 366**; in New Zealand, **179, 180, 445**; in Switzerland, **471**; in continental U.S.A., **7, 11, 13, 21, 79, 81, 262, 357, 364, 494, 496, 651**; on beans, **401**; transmitting virus diseases of beans, **349, 401**; on broad beans, **356**; on beet, **11, 242, 302, 356, 428, 494, 535, 538, 623**; and virus diseases of beet, **11, 61, 62, 242, 385, 428, 535, 538, 574**; on *Capsicum*, **496**; transmitting virus diseases of *Capsicum*, **57, 647**; on celery, **21**; on crucifers, **124, 302, 344, 356, 401, 445, 518, 538**; transmission of *Brassica* viruses by, **79, 124**; as vector of viruses of cucurbits, **13, 364, 651**; on lettuce, **302**; transmission of lettuce mosaic by, **79**; on potato, **61, 186, 356, 366, 400, 426, 471, 688**; and virus diseases of potatoes, **58, 180, 347, 395, 397, 400, 426, 574**; on poppy, **356**; on spinach, **302**; transmitting viruses of sweet potato, **350**; on tobacco, **81, 262, 411**; transmission of lucerne mosaic to tobacco by, **207**; on ornamental plants, **186, 258**; transmitting virus of *Tropaeolum*, **528**; on *Citrus*, **612**; on peach, **67, 688**; other primary food-plants of, **397**; effects of plant viruses on food-plant preferences of, **494**; electrostatic charge inhibiting transmission of virus by, **574**; other factors affecting transmission of viruses by, **349, 364, 574**; virus-like particles in salivary glands of, **400**; bionomics of, **11, 179, 397**; feeding habits of, **401**; flight habits of, **411, 538, 688**; instar-distribution of, **438**; atmospheric electricity in relation to moulting of, **642**; overwintering of, **67, 445**; effects of temperature on, **141, 283**; artificial diet for, **485**; fungus infesting, **258**; natural enemies of, **57, 58, 101, 518, 538, 626**; effects of sprays against *Leptinotarsa decemlineata* on predators and, **248**; toxicity of exudate of *Nicotiana gossei* to, **357**; effects of antibiotics on, **502**; traps for, **179, 426**; insecticides against, **21, 57, 61, 62, 81, 124, 186, 242, 258, 262, 366, 397, 428, 496, 623**; question of development of resistance to parathion in, **262**
Myzus poae, transmission of barley yellow-dwarf virus by, **350**

N

Nabam, effects of, on parasite of *Galleria mellonella*, **104**
Nabis, species of, predacious on lucerne pests in Kansas, **654**
Nabis ferus, predacious on insects in California, **88, 497**; toxicity of insecticides to, **88, 497**
Nacerdes melanura, infesting timber in Britain, **713**
Nacoleia octasema (on banana), in Pacific Is., **670, 671**; in Sumatra, **670**; in Territory of Papua and New Guinea, **670**; other food-plants of, **670, 671**; bionomics and parasites of, **671**
nacoleiae, Pentalitomastix
Nadata gibbosa, strain of *Bacillus thuringiensis* isolated from, **659**
naevana, Rhopobota
Naled (see Dimethyl 1,2-Dibromo-2,2-dichloroethyl Phosphate)
nana, Agromyza
nanella, Recurvaria
nanulus, Bracon (*Habrobracon*); *Neodiprion*
α-Naphthol, as metabolite of Sevin, **455**
α-Naphthylacetic Acid, synergistic effect of, with malathion against *Dysdercus koenigii*, **674**
napi, Ceutorhynchus
Napomyza lateralis (see *Phytomyza*)
Napomyza lonicerella, parasites and hyperparasite of, on *Lonicera* in Italy, **630**; diapause in, **630**
Naranga aenescens, effects of larval crowding on, **672**
Narcissus, *Merodon equestris* on, in Washington, **16**
nasicornis, Oryctes
Nasonia vitripennis, reared on *Phormia terraenovae*, **690**; pathogenicity of *Bacillus thuringiensis* to, **690**; toxicity of sprays to, **690**
Nasonovia (see *Myzus*)
nasturtii, Aphis (*Aphidula*); *Contarinia*
Nasturtium (see *Tropaeolum*)
nasuta, Prorops
nasutus, Amblytylus
Nasutitermes ephratae, colony development by, **292, 348**
Nasutitermes exitiosus, attacking *Eucalyptus microcorys* in Australia, **110**;

question of repellents to, in timbers, **110**; use of, in tests of termite deterrents, **110**
Navel Orangeworm (see *Paramyelois transitella*)
Nearctaphis (see *Anuraphis*)
Nebraska, *Loxagrotis albicosta* on beans in, **365**; *Hypera variabilis* on lucerne in, **19**; maize pests in, **5, 6, 81, 656**; *Chorizagrotis auxiliaris* in, **365**
Necrobia rufipes, study of factors affecting fecundity and development of, on copra, **121**; in diet of *Oryzaephilus mercator*, **122**
neglectus, *Nesosteles* (*Balclutha*)
Neguvon (see Trichlorphon)
Nemagon (see 1,2-Dibromo-3-chloropropane)
Nemapogon granella, in stored cereals, **466**
Nematocerus, species of, on cereals in Kenya, **27**; estimation of larval populations of, **27**; insecticides against, **27**
Nematocides, effects of soil treatment with, on emergence of *Magicicada septendecim*, **587**
Nematodes, on cultivated plants in France, **422**; on sugar-cane in Venezuela, **285**; as pests of crops in warm climates, **238**; transmission of, by weevils, **212, 499**; bacteria associated with, **577**; infesting insects, **58, 205, 238, 277, 312, 577, 603**; literature on radioisotopes in relation to, **389**; book on soil and freshwater species of, **238**
Nematus, species of, on larch in U.S.S.R., **255**
Nemeritis, parasitising *Dioryctria mendacella* in Italy, **542**
nemoralis, *Acantholyda* (see *A. pinivora*)
nemorum, *Anthocoris*
nenuphar, *Conotrachelus*
Neoaplectana, infection of forest pests by associated bacterium and, **577**
neobrevipes, *Dysmicoccus*
neocaledonicus, *Tetranychus*
Neocatolaccus nupserhae sp. n., parasitising *Nupserha bicolor postbrunnea* in W. Bengal, **49**
neocoxendix, *Oscinella*
neocynodonis, *Aceria*
Neodiprion abietis, eonymphal period of, in Ontario, **566**
Neodiprion lecontei, effects of cold storage on attractiveness of larvae of, to parasites, **512**; infection of, by nematode and associated bacterium, **577**
Neodiprion nanulus nanulus, bionomics and ecology of, on red pine in Wisconsin, **4**; resistance of jack pine to infestation by, **4**; natural enemies of, **4, 5**; fungus infesting, **5**
Neodiprion pratti banksianae, eonymphal period of, in Ontario, **566**
Neodiprion sertifer, on pines in Austria, **474**; in Canada, **172, 566**; eonymphal period of, **566**; parasites of, **172**
Neodiprion swainei (on pines in Quebec), effects of defoliation by, **603**; virus disease against, **220**; parasites of, **508, 596, 597**
Neomyzus (see *Myzus*)
neoniger, *Lasius*
Neophyllobius, predacious on *Quadraspidiotus ostreaeformis* in New Zealand, **181**
Neotran, tobacco leaves tainted by, **137**
Nephantis serinopa, dieldrin against, on coconut in India, **527**
Nephotettix cincticeps, on sugar-cane in Vietnam, **526**; light-trap catches of, **526**; sprays against, **526**
Nepticula lindquisti sp. n., bionomics of, on birch in Ontario, **221**; disease and parasites of, **221**; competition of *Bucculatrix canadensisella* with, **221**
Nepticula malella (see *Stigmella*)
Nepytia freemani sp. n., on Douglas fir in British Columbia, **702**
Nesosteles neglectus, on lucerne, grasses and weeds in Arizona, **98**
Netelia, parasitising *Heliothis zea* in N. Carolina, **358**
neustria, *Malacosoma*
Nevada, *Microlarinus* spp. introduced into, for control of *Tribulus terrestris*, **496**
New Britain, *Nacoleia octasema* on banana in, **671**; *Pantorhytes plutus* on cacao in, **671**; *Empoasca devastans* on cotton in, **121**; parasite of *N. octasema* in, **671**
New Brunswick, pests of apple in, **168, 360, 564, 662**; cutworms on blueberry in, **569**; aphids on potato in, **366**; *Hylemya brassicae* on turnip in, **281**; forest pests in, **4, 592, 593**; relation of wood-destroying fungi to Siricids in, **4**; blueberry pollinated by bumble bees in, **43**; winter survival of aphids in, **283**; natural enemies of aphids in, **568, 593**
New Caledonia, Cerambycids infesting timber in, **444**
New Guinea, *Pantorhytes proximus* on cacao in, **295**; pests of other crops in, **457**; Cerambycids infesting timber in, **444**; cable damaged by termite in, **703**; as source of beneficial insects for biological control, **444** (See also Papua and New Guinea, Territory of)

New Guinea, Netherlands, pests of crops in, **457**; *Coptotermes hyaloapex*, in **517**
New Hampshire, injurious fungi isolated from *Sitona* spp. on white clover in, **351**
New Hebrides, Cerambycids infesting timber in, **444**
New Ireland, *Pantorhytes proximus* on cacao in, **671**
New Jersey, *Cydia molesta* on peach in, **90**; Coleoptera transmitting canker fungus of *Platanus* in, **351**; parasite of *Hypera punctata* in, **148**
New South Wales, Coccids on orange in, **181, 182**; pests of *Eucalyptus* in, **105, 608**; virus disease of tomato in, **137**; pests of other plants in, **106, 311, 312**; outbreaks of *Chortoicetes terminifera* in, **312**; *Dacus tryoni* in, **310**; virus disease of *Sericesthis pruinosa* in, **702**; beneficial insects in, **182, 310, 311, 312**
New York, pests of fruit trees in, **82, 362, 580, 587**; *Paralobesia viteana* on vines in, **82, 577**; *Hylastes obscurus* on red clover in, **370**; lucerne pests in, **148, 156, 157, 268, 368, 406, 487, 582, 585**; *Mayetiola destructor* on wheat in, **91**; virus disease of cereals in, **351**; forest pests in, **24, 96, 464, 665**; pests of vegetables in, **454, 487, 585**; Anobiids infesting building timber in, **466**; *Amphimallon majalis* in, **194, 576**; list of aphids of, **349**; food-plant range of *Lygus lineolaris* in, **487**; *Tetranychus telarius* in, **590**; diseases of *Lymantria dispar* in, **666**; natural enemies of pests in, **194, 406, 585, 586, 665, 666**; insecticide residues on hay plants in, **267**
New Zealand, pests of crucifers in, **180, 181, 309, 445**; aphids and virus diseases of potato in, **179, 180**; pests of pasture in, **178**; *Quadraspidiotus ostreaeformis* on fruit and ornamental trees in, **181, 446**; forest pests in, **444, 703**; *Sirex noctilio* transmitting fungus disease of pines in, **465**; insects infesting timber in, **45, 138, 233, 444**; pests of stored products in, **139**; *Myzus persicae* overwintering in, **445**; *Plusia chalcites* in, **58**; bees pollinating clover in, **179, 445**; natural enemies of pests in, **45, 181, 309, 444**; rôle of entomology in crop production in, **703**; tolerance limits for insecticides in, **139, 178**
Newfoundland, *Hylemya brassicae* on crucifers in, **602**
Nexion (see Methyl 1,1-Ethoxycarbonylmethyl-2,2-dichloro-1,3-propylene Phosphate)
Nezara antennata, effects of temperature on development of, **316**
Nezara viridula, on cotton in Congo, **53**; on tomato in Italy, **677**; effects of temperature on development of, **316**; sprays against, **677**
ni, *Trichoplusia*
NIA 5767 (see Endothion)
NIA 9044 (see 2-sec.-Butyl-4,6-dinitrophenyl 3,3-Dimethylacrylate)
Niacide (and Niacide A), effects of, on populations of *Panonychus ulmi*, **493**; composition of, **493**
Niacin (see Nicotinic Acid)
Niagara 5767 (see Endothion)
Nicandra physaloides, aster-yellows virus transmitted to, by *Macrosteles fascifrons* in California, **649**
Nicotiana bidlovia, susceptibility of, to beet viruses, **386**
Nicotiana clevelandi, susceptibility of, to beet viruses, **386**
Nicotiana glutinosa, aster-yellows virus transmitted to, by *Macrosteles fascifrons* in California, **649**
Nicotiana gossei, toxicity of exudate of, to *Myzus persicae* in U.S.A., **357**
Nicotiana rustica, aster-yellows virus transmitted to, by *Macrosteles fascifrons* in California, **649**
Nicotine, against aphids, **357, 426**; toxicity of, to *Harpalus rufipes*, **380**; treatment of mushroom beds with, against *Heteropeza pygmaea*, **384**; against Lepidoptera, **318, 544**; against emerging adults of *Rhagoletis pomonella*, **168**; against Tetranychids, **287, 320**; in sprays, **318, 320, 544**; oil treatment with, **168**; in traps, **426**
Nicotine Sulphate, against aphids, **98, 271**; against Lepidoptera, **34, 51**; ineffective against *Prodenia litura*, **414**; unsatisfactory against *Tetranychus*, **287**; development of *Beauveria bassiana* inhibited by, **393**; in root dip, **98**; in sprays, **34, 51, 271, 287**; in oil emulsion, **51**
Nicotinic Acid, antimetabolites of, **259**
Nicotox (see Nicotine)
Niger, question of *Pachnephorus testaceipes* damaging cotton in, **670**
niger, *Lasius*; *Rhaconotus*
Nigeria, pests and diseases of cacao in, **113, 114, 115, 118, 119, 378, 571**; *Phosphorus virescens* on *Cola* in, **119**; cotton pests in, **228, 229**; Bruchids infesting cowpeas in, **667**; Lepidoptera on sorghum in, **378**; forest pests in, **373, 376, 377**; locusts in, **387**; bark-beetles infesting timber in, **693**; pests of stored cereals in, **378, 541**; *Carbula pedalis*

infesting houses in, **372, 459**; beneficial insects in, **119, 377**
nigra, Megaselia; *Monorthochaeta*
nigricana, Cydia (*Laspeyresia*); *Eucosma* (*Epinotia*)
nigricans, Formica
nigriceps, Cardiochiles
nigricornis, Psila; *Trioza*
nigripes, Blondelia; *Phyllotreta*
nigrirostris, Hypera
nigritarius, Cratichneumon
nigritula, Dactylispa
nigrivenella, Mussidia
nigrocellulata, Cremifania
nigronervosa, Pentalonia
nigropilosus, Thrips
nigrorepletus, Hieroglyphus
nilae, Apanteles
Nilaparvata lugens (in Japan), on rice, **48**; overwintering of, **48, 226**
Nipa fruticans (Nipa Palm), new Pentatomid on, in N. Borneo, **314**; as foodplant of *Nacoleia octasema*, **670**
niponensis, Carposina (see *C. sasakii*)
nirguensis, Aeneolamia flavilatera
nitida, Lampronota
nitidus, Pissodes
Nitrobenzene, in baits for *Crambus caliginosellus*, **15**
5-Nitro-2-furaldehyde Semicarbazone (see Nitrofurazone)
Nitrofurazone, experiments with Coleoptera and, **501**
1 - (5 - Nitrofurfurylidene) - 2 - imidazolidinethione (see Thiofuradene)
Nitrogen, influence of, on stages of *Dacus dorsalis* treated with γ-rays, **263**
nivella, Scirpophaga
niveosparsus, Idiocerus
njalensis, Planococcoides
noctilio, Sirex
noctuella, Nomophila
Noctuid, Grain (see *Hadena sordida*)
nodiceps, Cryptognatha
nomadacridis, Ceracia
Nomadacris septemfasciata, in Madagascar, **514**; in Nigeria, **387**; in Nyasaland, **640**; in N. Rhodesia, **229, 540**; in Tanganyika, **105, 229, 387, 540, 693**; on sugar-cane, **514**; behaviour of sexually immature adults of, **540**; influence of photoperiod on diapause in, **386**; parasitised by *Ceracia nomadacridis*, **105**; insecticides against, **229, 230, 540**
Nomophila noctuella, on lucerne in Bulgaria, **188, 417**; bionomics of, **417**; measures against, **417**
nonagrioides, Sesamia
Norbanus acuminatus sp. n., parasitising *Nupserha bicolor postbrunnea* in W. Bengal, **49**
nordmannianae, Chermes
Norway, *Hylemya* spp. on crucifers in, **344**; forest pests in, **345, 637**; pests of greenhouse plants in, **293, 691**; pests of stored foodstuffs in, **637, 701**
Nosema, infecting *Pseudaletia unipuncta*, **407**; activation of polyhedrosis virus by, **407**
Nosema bombycis, infesting *Hyphantria cunea* in Czechoslovakia, **332**; effect of, on fecundity of *H. cunea*, **332**
notata, Euxesta; *Trialeurodes*
notatus, Monochamus; *Pissodes*
Nova Scotia, apple pests in, **84, 89, 142, 143, 224, 509, 511, 564, 565**; *Eulecanium coryli* in, **507**; fungus infesting *Psylla mali* in, **509**; natural enemies of pests in, **142, 225, 507, 511, 565**
Novius cardinalis (see *Rodolia*)
noxius, Tyrophagus (see *T. putrescentiae*)
nu, Rachiplusia
nubilalis, Ostrinia (*Pyrausta*)
nudibasis, Actia
nuesslini, Chermes (*Dreyfusia*) (see *C. nordmannianae*)
Nupserha bicolor postbrunnea (on jute), in India, **49**; in E. Pakistan, **622**; new parasites of, **49**
nupserhae, Neocatolaccus
Nyasaland, cotton pests in, **228, 387, 634**; *Nomadacris septemfasciata* in, **640**
nymphaea, Ephesia (*Catocala*)
nymphagoga, Catocala
Nysius minor, BHC spray against, on camomile in Jammu, **620**
Nythobia, species of, parasitising *Depressaria subpropinquella* in France, **338**; parasitising *Rhopobota naevana ilicifoliana* in U.S.A., **51**
Nythobia fenestralis, bionomics of, parasitising *Heliothis armigera* in India, **257**
Nythobia monospila, parasitising *Choreutis bjerkandrella* in France, **338**

O

Oak, *Tortrix viridana* on, in Britain, **385**; pests of, in Bulgaria, **192, 465**; arthropod fauna of, in Czechoslovakia, **107**; Geometrids on, in Germany, **101, 102**; *Boarmia bistortata* on, in Holland, **241**; pests of, in U.S.S.R., **71, 72, 73**; pests of, in U.S.A., **76, 154, 369**; pests of, in Yugoslavia, **54, 193**; insects infesting acorns of, **154, 192**; insects associated with *Ceratocystis fagacearum* on, **369**; question of development of *Eulecanium*

corni on, **54**; effects of infestation by *Lymantria dispar* on growth of, **193**; delaying bud development of, as measure against *Tortrix viridana*, **300**; systemic treatment of, with insecticides, **154, 385**; (timber), treatment of, against *Lyctus brunneus*, **233** (See also *Quercus* spp.)
Oak, Cork (see *Quercus suber*)
Oak, Garry (see *Quercus garryana*)
Oak, Green (see *Quercus ilex*)
Oak, Red (see *Quercus rubra*)
Oats, *Oscinella frit* on, in Britain, **245, 558, 694**; pests of, in Bulgaria, **190, 416**; pests of, in Canada, **2, 605**; *Javesella pellucida* on, in Finland, **63, 459**; *O. frit* on, in France, **425**; pests of, in Germany, **433, 434, 686**; oviposition of *Apamea basilinea* on, in Persia, **127**; pests of, in Sweden, **560, 562, 563**; *Rhopalosiphum padi* on, in Switzerland, **60**; *Elachiptera cornuta* on, in U.S.S.R., **254**; pests of, in U.S.A., **274, 651, 693**; bollnäs disease of, **562**; virus diseases of, **60, 63, 64, 291, 351, 563, 574, 651, 693**; varietal susceptibility of, to mosaic virus, **651**; relation of *Phleum pratense* to infestation of, by *J. pellucida*, **63**; factors affecting susceptibility of, to *O. frit*, **245, 434**; effects of insects on growth of, **459, 562**; rotation of, in relation to infestation of maize by *Ostrinia nubilalis*, **656**; seeds of, used in food-selection tests with wireworms, **536**; seed treatment of, **425**; toxicity of insecticides to, **425**; (stored), Coleoptera in, **273**; cleaning in relation to reinfestation of, **273**
Oberea oculata, feeding and oviposition habits of, on willows in Yugoslavia, **54**
obesa, *Carcelia*
obesus, *Odontotermes*
obliqua, *Diacrisia*
obliquus, *Listroderes* (see *L. costirostris*)
oblongopunctatus, *Pterostichus*
obscurator, *Orgilus*
obscurella, *Javesella* (*Calligypona*)
obscurellus, *Triaspis*
obscurus, *Anaphothrips*; *Apanteles*; *Hylastes* (*Hylastinus*); *Oencyrtus*; *Pseudococcus*
obsoleta, auct., *Heliothis* (*Chloridea*) (see *H. armigera*)
obtectus, *Acanthoscelides*
obtusa, *Melanagromyza*
obtusus, *Charops*; *Tachyporus*
occidentalis, *Casca*, *Frankliniella*; *Leptoglossus*; *Pogonomyrmex*
occupator, *Exephanes*
ocellana, *Spilonota*
ocellaris, *Dinoderus*
ocellata, *Anatis*
ocellatella, *Scrobipalpa* (*Phthorimaea*)
ochraceus, *Aedes*
ochrogaster, *Euxoa*
Ocneria dispar (see *Lymantria*)
1,3,4,5,6,7,8,8 - Octachloro - 3a,4,7,7a - tetrahydro-4,7-methanophthalan, against aphids, **14, 262, 390**; against Coleoptera, **153, 166, 260**; against *Contarinia pisi*, **243**; toxicity of, to *Eurytoma roddi*, **588**; against Lepidoptera, **14, 137, 165, 390**; against thrips, **12, 390**; against *Steneotarsonemus fragariae*, **395**; toxicity of, to tobacco, **137**; in dusts, **262**; in granules, **165**; in sprays, **12, 14, 137, 153, 165, 166, 167, 243, 390, 395**; applied in transplanting water, **260**; soil treatment with, **260**; residues of, on tobacco, **167**; experiments on recovery of, from cigarette smoke, **167**; and methyl-parathion, **12**
octasema, *Nacoleia*
oculata, *Chrysopa*; *Oberea*
odinae, *Toxoptera*
Odinia maculata, destroying *Trypodendron lineatum* in Czechoslovakia, **252**
Odontotermes obesus, treatment of mounds against, in India, **619**
Oebalus pugnax (on rice in U.S.A.), effects of infestation by, on yield and quality of rice, **153**; parasites of, **83, 364**; tests and uses of sprays against, **83**
Oedaleus senegalensis, swarming habits of, in India, **703**
Ohio, pests of cereals in, **17, 18, 655, 656**; pests of ornamental plants in, **400, 504, 575**; *Rhyacionia buoliana* on red pine in, **452**; parasite of *Macronoctua onusta* in, **505**
Oil, Tallow (see Tallow Oil)
Oil Emulsions, against *Aleurocanthus woglumi*, **125**; against aphids, **196, 206, 547**; against Coccids, **5, 78, 99, 150, 181, 195, 196, 328, 330, 423, 426, 458**; factors affecting susceptibility of *Eulecanium corni* to, **362**; against Lepidoptera, **242, 542, 544, 564**; hatching of eggs of *Ostrinia nubilalis* inhibited by, **82**; against mites, **53, 90, 196, 209, 289, 395, 396**; effects of, on beneficial insects, **423, 426**; toxicity of, to strawberry, **242**; integration of biological control with, **78**; type of oil for, **90**; determination of deposits of, **108**; and DDT, **426**; and DNC, **195, 196, 206, 209, 289, 426, 544**; and phosphorus insecticides, **99, 125, 242,**

330, 395, 396, 423, 424, 458, 542, 546, 547; and rotenone, **125**
Oil Palm (see *Elaeis guineënsis*)
Oil Red O Dye, use of, in determination of oil deposits on plant surfaces, **108**
Oils, antibiotics applied in, **578**; preparation of *Bacillus thuringiensis* applied in, **660**; in baits for fire ants, **264**; as carriers for antimetabolites, **259, 260**; aircraft application of insecticides in, **87**; treatment of timber with, against Coleoptera, **233**; other uses of, as solvents or carriers for insecticides, **52, 85, 170, 183, 187, 189, 324, 371, 423, 432, 450, 461, 465, 544, 547, 581, 656, 664, 678**; diffusion of films of, on insects, **212**; effects of, on *Citrus* juice, **181**; phytotoxicity of, **52**; use of cards to determine distribution of, **581**; parathion residues in, **46, 361**; and DDT, **461** (See also Kerosene)
Oils, Essential (see Coriander Oil)
Oils, Fish (see Fish Oil)
Oils, Vegetable (see Groundnut, Linseed, Maize, Olive, Soy-bean and Tung Oils)
Oklahoma, pests of cereals in, **165, 166, 268, 269, 271, 581**; *Spodoptera frugiperda* on lucerne in, **165**; pests of green vegetables in, **361**; parasite of *Aphis maidis* in, **271**
Okra (see *Hibiscus esculentus*)
Olea europea oleaster, **200** (See Olive)
oleae, *Dacus*; *Liothrips*; *Parlatoria*; *Saissetia* (*Coccus*)
oleellus, *Prays*
Oleic Acid, use of, in experiments with *Adoxophyes orana*, **48**; growth of *Agria affinis* favoured by, **172**; as solvent for antimetabolite, **259**
oleivora, *Phyllocoptruta*
Oleofos 20, **38**
Oleoparathion, **395, 396, 423, 546, 547**
Oleoresin, attraction of bark-beetles to, **354**
Olesicampe lophyri, parasitising *Neodiprion swainei* in Quebec, **508, 597**; relation of other parasites to, **508**; parasite of, **597**
Olethreutes variegana (see *Argyroploce*)
Olfactometers, use of, in experiments with sex attractants of bark-beetles, **451**
Oligonychus bicolor, in Georgia, **503**; vapour toxicity of dichlorvos to, **503**
Oligonychus coffeae, on jute in E. Pakistan, **623**; map of distribution of, **389**
Oligonychus pratensis, on maize in California, **147**; sprays against, **147**
Oligonychus ununguis, bionomics of, on ornamental conifers in Germany, **334**; acaricides against, **334**
Olive, *Parlatoria oleae* on, in California, **353**; *Dacus oleae* on, in Corsica, **204**; *Prays oleellus* on, in Greece, **321**; *Margaronia unionalis* on, in Israel, **479**; pests of, in Italy, **38, 39, 195, 196, 197, 200, 201, 208, 241, 329, 330, 420, 421, 545, 631**; *Saissetia oleae* on, in Morocco, **104**; *D. oleae* on, in Yugoslavia, **128**; fungus infesting, **420**; experiments with parasite and *D. oleae* on infestation of, **200**; systemic activity of dimethoate and analogue in, **208**; residues of insecticides in (see also next entry), **39, 45, 128, 241, 330, 421, 460, 632, 703**; detection of dimethoate residues in, **44**
Olive Oil, use of, in experiments with *Adoxophyes orana*, **48**; insecticide residues in, **46, 197, 241, 329, 421, 632, 703**; detection of dimethoate residues in, **44**
Ollarianus strictus, lucerne not colonised by, in Arizona, **98**
Ommatissus binotatus lybicus, bionomics and feeding habits of, on date palms in Iraq, **123, 124**; natural enemies of, **123**; sprays against, **124**
Omophlus lepturoides, insecticides against, in Bulgaria, **190, 191**
Omophlus proteus, in Bulgaria, **190**; predacious on *Quadraspidiotus perniciosus* in Yugoslavia, **129**; insecticides against, **191**
Omphale varipes, parasitising *Contarinia medicaginis* in France, **550**
Oncopeltus fasciatus, insecticide penetration of integument of, **495**; susceptibility or resistance to insecticides in strains of, **300, 494**
Onion, pests of, in Bulgaria, **190, 418**; *Heliothis armigera* feeding on, in China, **287**; Diptera on, in Finland, **108**; *Hylemya antiqua* on, in France, **422**; *Myzus ascalonicus* on, in Germany, **433**; pests of, in Italy, **544**; *H. antiqua* on, in Quebec, **604, 664**; *Desiantha maculata* on, in Victoria, **310**; attractiveness of varieties and hybrid of, to *H. antiqua*, **664**; seed treatment of, **418, 422**; toxicity of EN 18133 to, **604**
onobrychidis, *Eurytoma*
Onobrychis viciifolia, pests of, in Bulgaria, **478**; influence of nectar of, on fecundity of *Lampronota nitida*, **523**
onobrychis, *Macrosiphum* (*Acyrthosiphon*) (see *M. pisum*)
Ontario, *Pieris rapae* on cabbage in, **510**; *Psila rosae* on carrot in, **15**; *Thymelicus lineola* on grasses in, **568**; *Ostrinia nubilalis* on maize in, **439**; pests of peach in, **214, 218, 664, 665**; pests of other

fruit trees in, **214, 361, 362, 600**; *Phylloxera vitifoliae* on vines in, **98**; forest pests in, **3, 9, 145, 146, 147, 213, 216, 221, 565, 566, 567, 597**; food-plants of *Haltica corni* in, **586**; other *Haltica* spp. in **587**; other pests in, **93, 235, 505, 660**; fungus disease of new Nepticulid in, **221**; beneficial insects in, **213, 218, 221, 505, 568, 586, 587, 665**
ontario, *Apechthis* (*Ephialtes*)
onusta, *Macronoctua*
Ooctonus aphrophorae, egg-parasite of *Aphrophora saratogensis* in N. America, **24**
Ooencyrtus, egg-parasite of *Caligo memnon* in Costa Rica, **488, 492**
Ooencyrtus kuvanae, egg-parasite of *Lymantria dispar* in Yugoslavia, **249, 327**; method of rearing, **249**
Ooencyrtus obscurus, question of occurrence of, as egg-parasite of *Lymantria dispar* in Yugoslavia, **327**
Ooencyrtus submetallicus, egg-parasite of *Opsiphanes tamarindi* in Costa Rica, **488, 492**; sex determination and gynandromorph production in strains of, **459**
oophilus, *Opius*
Ootetrastichus formosanus, egg-parasite of Delphacids in Madagascar, **513**
opacum, *Inostemma*
Opatroides frater, on tobacco in India, **675**
operculella, *Phthorimaea* (*Gnorimoschema*)
Operophtera bruceata, bionomics and adult habits of, on fruit and other trees in Canada, **568, 569**; in U.S.A., **569**; parasites of, **569**
Operophtera brumata, in Britain, **464**; in Germany, **101**; in Switzerland, **636**; on apple, **636**; on oak, **101, 464**; effects of defoliation by, on timber increment, **464**; bionomics of, **101**; natural enemies of, **102**; traps for, **102**; measures against, **424, 636**
Ophiomyia pinguis (see *Tylomyza*)
Opius (parasitising Diptera), in England, **480**; in Italy, **329, 630**; in Pakistan, **279**; new species of, **480**
Opius compensans, parasitising *Dacus dorsalis* in Hawaii, **310**
Opius concolor (parasitising *Dacus oleae*), introduced into Corsica, **205**; in Italy, **200, 421, 632**
Opius fletcheri, established in Hawaii against *Dacus cucurbitae*, **443**
Opius formosanus, parasitising *Dacus dorsalis* in Hawaii, **310**
Opius incisi (parasitising *Dacus* spp.), introduced into Australia, **310, 311**; in Hawaii, **310**; methods of rearing and transporting, **310**
Opius longicaudatus (parasitising Trypetids), introduced into Australia, **310, 311**; in Hawaii, **310, 443**; methods of rearing and transporting, **310**
Opius longicaudatus malaiaensis, established in Hawaii against Trypetids, **443**
Opius oophilus (parasitising Trypetids), introduced into Australia, **310, 311**; in Hawaii, **310, 443**; methods of rearing and transporting, **310**
Opius rhagoletiocolus, parasitic on *Rhagoletis cerasi* in Yugoslavia, **193**
Opius siculus (see *O. concolor*)
Opius testaceus, parasitic on *Rhagoletis cerasi* in Yugoslavia, **193**
Opius vandenboschi (parasitising Trypetids), introduced into Australia, **310, 311**; in Hawaii, **310, 443**; species identified as, in Pakistan, **279**; methods of rearing and transporting, **310**
Opius watersi, liberated in Hawaii against Trypetids, **443**
Opomyza florum, on cereals in Bulgaria, **392**
oporanus, *Archippus* (*Cacoecia*)
Opsiphanes tamarindi, bionomics of, on banana, coconut and other plants in Costa Rica, **487, 488, 492**; parasites of, **488, 492**
optabilis, *Anagrus* (*Paranagrus*)
opulenta, *Prospaltella*
orana, *Adoxophyes*
Orange, *Heliothis armigera* on, in Bulgaria, **190**; *Toxoptera citricidus* on, in India, **176**; Coccids on, in New South Wales, **181, 182**; mites on, in Sicily, **199, 200**; pests of, in U.S.A., **23, 176, 371**; behaviour of crawlers of *Lepidosaphes beckii* on, **480**; tristeza virus of, **176**
Orange, Mandarin, mites on, in Sicily, **199, 200**
Orange Tortrix (see *Argyrotaenia citrana*)
Orangeworm, Navel (see *Paramyelois transitella*)
orbicularis, *Otiorhynchus*
orbiculata, *Podagrica*
orbitalis, *Pristomerus*
Orcus chalybeus, predacious on *Aonidiella aurantii* in New South Wales, **182**
Oregon, *Sitona hispidulus* on red clover in, **498**; orchard pests in, **485, 496**; pear decline in, **485, 486**; forest pests in, **80, 219, 450, 507, 516**; aphids on lily in, **99**; *Pogonomyrmex occidentalis* in, **493**; beneficial insects in, **219, 507**; tolerance limits for insecticides in, **496**
oregonensis, *Contarinia*

Orgilus obscurator (parasitising *Rhyacionia buoliana*), in Germany, **463**; in U.S.A., **166**; in Yugoslavia, **463**
Orgyia dubia, on *Polygonum equisetiforme*, etc. in Israel, **478**; parasites and hyperparasites of, **479**
Origanum vulgare, *Chamaesphecia aerifrons* on, in France, **515**
Orius, predacious on *Prodenia* in Egypt, **30**; effects of sprays on, **30**
Orius minutus, predacious on mites and *Aphis pomi* in Germany, **624**, **690**
Orius tristicolor (in California), predacious on *Colias eurytheme*, **497**; predacious on *Hypera brunneipennis*, **88**; toxicity of insecticides to, **88**, **497**
orizicola, *Sogatodes* (*Chloriona*, *Sogata*)
ornatipennis, *Goryphus* (*Melcha*)
ornatus, *Cheletogenes*; *Myzus*
Orthezia praelonga, insecticides against, on *Citrus* in Brazil, **447**
Orthocide 50 (see Captan)
orthoclina, *Phycita*
orthogonia, *Agrotis*
Orthorrhinus cylindrirostris, on *Citrus*, vines and other fruits in S. Australia, **461**
Orthotomicus (see *Ips*)
Oryctes, effects of atrophy disease on species of, **590**
Oryctes boas, in Kenya, **590**
Oryctes elegans, on date palm in Iraq, **540**
Oryctes monoceros, in Tanganyika and Zanzibar, **590**
Oryctes nasicornis, in Germany, **590**
Oryza, study of species of, as food-plants for *Chloriona orizicola* in Louisiana, **152** (See also Rice)
oryzae, *Chlorops*; *Latheticus*; *Sitophilus* (*Calandra*)
oryzae, auct., *Sitophilus* (*Calandra*) (see *S. zeamais*)
Oryzaephilus mercator, in stored products in Germany, **686**; effects of *Necrobia rufipes* in diet of, **122**; characters of, **686**
Oryzaephilus surinamensis, in stored foodstuffs: in Britain, **379**; in Germany, **686**; in India, **530**; in Sweden, **561**, **687**; in U.S.A., **11**, **13**; nutritional requirements of, **532**; factors affecting dispersion of, **539**; predator of, **530**; cleaning stored cereals in relation to reinfestation by, **273**; tests of antimetabolite against, **259**; other measures against, **11**, **12**, **100**, **161**, **167**, **499**, **561**; factors affecting susceptibility of, to insecticides, **13**; characters of, **686**
oryzivora, *Thaia*
Oscinella, species of, on *Cynodon magennisii* in S. Rhodesia, **125**
Oscinella conicola, on *Pinus radiata* in California, **306**
Oscinella coxendix, silver top of bluegrass caused by, in Kentucky, **151**; insecticides against, **152**
Oscinella frit (on cereals), in Britain, **245**, **437**, **558**, **694**; in Bulgaria, **392**, **416**; in France, **244**, **245**, **425**; in Germany, **433**, **434**, **685**, **686**; in India, **43**; in Sweden, **560**; in U.S.S.R., **254**, **255**; varietal susceptibility of cereals to, **244**, **245**, **434**; other food-plants of, **244**, **245**, **686**; relation of, to infestation of maize by *Elachiptera cornuta*, **254**, **255**; bionomics of, **433**; flight habits of, **437**, **686**; factors affecting morphology and pigmentation of, **244**; colour preferences of, **686**; population study of, **694**; sampling methods for, **694**; traps for, **686**; insecticides against, **416**, **425**, **558**, **560**, **686**
Oscinella neocoxendix, silver top of bluegrass caused by, in Kentucky, **151**; insecticides against, **152**
Oscinella trochanterata, on maize in Germany, **434**
Oscinis pumilionis (see *Chlorops*)
Oscinosoma frit (see *Oscinella*)
osmana, *Barbara*
ostreaeformis, *Quadraspidiotus*
Ostrinia nubilalis, in Canada, **177**, **439**, **591**; in France, **290**; in India, **49**; in Rumania, **318**; in U.S.S.R., **40**, **297**; in U.S.A., **81**, **82**, **177**, **235**, **239**, **290**, **461**, **488**, **590**, **655**, **656**; in Vietnam, **526**; in Yugoslavia, **244**, **249**, **291**, **348**; on *Capsicum*, **81**, **82**; on *Citrus*, **297**; on hemp, **40**; on maize, **40**, **235**, **239**, **244**, **249**, **297**, **318**, **348**, **439**, **461**, **488**, **526**, **590**, **591**, **655**, **656**; varietal susceptibility of maize, to, **244**, **249**, **290**, **291**, **318**, **348**; on tea, **297**; bionomics of, **177**, **235**, **318**; feeding habits of, in relation to moisture content of plants, **297**; apparatus for study of flight patterns in, **271**; sowing date in relation to infestation by, **249**, **488**; other factors affecting populations of, **591**; **656**; parasites of, **41**, **318**, **328**; bacterial diseases of, **590**; *Bacillus thuringiensis* ineffective against, **655**; effects of X-rays on reproduction of, **584**; measures against, **82**, **177**, **235**, **239**, **318**, **439**, **461**, **526**, **655**
Ostrya virginiana, larvae of *Paraclemensia acerifoliella* feeding on, in Ontario, **567**
Othreis fullonia, bionomics of, feeding on tomatoes in Samoa, **661**

Otiorhynchus fullo, on fruit trees in Bulgaria, **321**
Otiorhynchus orbicularis, bionomics of, on beet, sunflower, etc. in Bulgaria, **321**
oudemansi, *Brevipalpus* (see *Cenopalpus pulcher*)
Oulema melanopa (see *Lema*)
ovata, *Eriocampa*; *Fulmekiella*
Ovex (see Chlorfenson)
Ovoclor, in sprays against *Tetranychus telarius*, **199**; composition of, **199**
Ovomitex, against *Tetranychus telarius*, **199, 200**; composition of, **199**
Ovotran (see Chlorfenson)
OW-9 (see 2-Chloroethyl 2-(2-(p-tert.-Butylphenoxy)isopropoxy)isopropyl Sulphite)
Owls, insecticide residues in tissues of, **642**
oxyacanthae, *Rhopalosiphum* (see *R. insertum*)
Oxycanus, DDT against, in pastures in New Zealand, **178**
Oxycarenus hyalinipennis, on cotton in Congo, **53**
Oxycarenus latus, on cotton in Ceylon, **618**
oxylus, *Panstenon* (see *P. assimilis*)
Oxyopes sertatus, predacious on *Contarinia inouyei*, **413**; liberated in Japan, **413**
Oxythyrea funesta, on fruit trees and leguminous crops in Bulgaria, **191, 322**

P

pabulinus, *Lygus*
Pachnephorus testaceipes, adult habits of, damaging cotton in Madagascar, **670**; question of other food-plants of, **670**; measures against, **670**
Pachylobius picivorus, bionomics of, on pine in U.S.A., **77**
Pachynematus alaskensis, infection of, by nematode and associated bacterium, **577**
Pachyneuron, parasite and hyperparasite of *Eulecanium corni* in U.S.S.R., **135**
Pachyneuron coccorum, hyperparasite of *Planococcus citri* in Italy, **420**
Pachyneuron minutissimum, hyperparasite of *Brevicoryne brassicae* in Holland, **518**
Pachyneuron siphonophorae, hyperparasite of *Chromaphis juglandicola* in California, **151**
Pachypappella populi (*lactea*), on aspen in Finland and Sweden, **470**
Pachypsylla celtidismamma, insecticides against, on hackberry in Kansas, **14**
Pachypsylla celtidisvesiculum, on hackberry in Kansas, **14**; trunk injection of Shell SD-3562 against, **14**
Pacific Islands, Cerambycids infesting timber in, **444** (See also Fiji, Micronesia and Samoa)
Pacific Silver Fir (see *Abies amabilis*)
pacifica, *Trachys*
pacificus, *Tetranychus*
Packaging Materials, tests of treatments of, against insect pests, **232**
packardi, *Trialeurodes*
padellae, *Pimpla* (see *P. turionellae*)
padellus, *Hyponomeuta*
padi, *Rhopalosiphum*
Paddy (see Rice)
Paederus alfierii, predacious on *Prodenia* in Egypt, **30**; effects of sprays on, **30**
painei, *Critheus*
Paint, used for marking insects, **438**
Pakistan, *Diaphorina citri* on *Citrus* in, **622**; *Empoasca devastans* on cotton in, **121**; moth-borers on cereals and grasses in **277–279**; pests of jute in, **622**; forest pests in, **623**; *Carpomyia vesuviana* on *Ziziphus* in, **279**; pests of stored products in, **527, 700**; other pests in, **279, 313**; beneficial insects in, **125, 277, 278, 279, 623**; question of introduction of parasites of moth-borers into, **279**; scope of radiation sources in entomology in, **525**
Paleacrita vernata, on elm in Kansas, **15**; measures against, **15**
Pales pavida, parasitising *Margaronia unionalis* in Israel, **479**
pales, *Hylobius*
palitans, *Praon*
pallens, *Schistocerca*
pallida, *Podagrica*
pallidipennis, *Trimerotropis*
pallidula, *Pheidole*
pallidus, *Steneotarsonemus*; *Tarsonemus* (see *S. fragariae*); *Trioxys*
pallipes, *Euphorus*; *Microdiprion*
Palm, Oil (see *Elaeis guineënsis*)
palmarum, *Rhynchophorus*
Palms, *Carvalhoia arecae* on, in India, **621**; *Brontispa limbata* on, in Mauritius, **457** (See also Coconut and Date Palm)
Palorus shikhae, bionomics of, predacious on pests of stored cereals in India, **530**
paludosa, *Tipula*
Pammene rhediella, in Britain, **62, 63, 559**; in Yugoslavia, **326**; on fruit trees, **62, 63, 326, 559**; on hawthorn, **326, 559**; bionomics of, **559**; larval activity of, **62**; sprays against, **62, 560**

pampina, Eucirroedia
Pandanus, as food-plant of *Nacoleia octasema* in New Guinea, **670**
Pandemis ribeana, bionomics of, on fruit trees in Bulgaria, **554**
Pangola Grass (see *Digitaria decumbens*)
paniceum, Stegobium
Panicum crusgalli (see *Echinochloa*)
Panicum maximum, new pest of, in Venezuela, **606**
Panonychus, species of, on raspberry and other plants in Virginia, **19, 20**; bionomics of, **19**; hybridisation of, with congeners, **20**
Panonychus citri (on *Citrus* in U.S.A.), natural enemies of, **77**; pathogen of, **692**; effects of cover crops on populations of, **22**; effects of chemosterilants on, **269, 270**; unidentified species resembling, **19**; hybridisation of, **20**
Panonychus ulmi, in Austria, **65, 472**; in Belgium, **209**; in Britain, **62, 63, 207, 209, 210, 340**; in Canada, **2, 3, 214, 448, 450, 565, 595, 600**; in Finland, **297**; in France, **290**; in Germany, **209, 557, 624, 690**; in Holland, **207, 208, 209, 690**; in Italy, **194, 208, 210, 289, 677**; in Japan, **227, 315, 316, 613**; in Sweden, **561**; in Switzerland, **400**; in U.S.A., **93, 493, 655, 658**; on fruit trees, **2, 3, 62, 63, 93, 194, 207, 208, 209, 210, 214, 227, 289, 297, 315, 316, 340, 400, 448, 450, 472, 493, 557, 561, 565, 595, 600, 613, 624, 655, 658, 677, 690**; on vines, **290, 472**; bionomics of, **62, 289, 316, 472**; effects of temperature on, **236, 315**; rearing of, under controlled conditions, **600**; competition between *Tetranychus telarius* and, **214, 600**; natural enemies of, **2, 3, 65, 297, 565, 624, 690**; effects of insecticides and fungicides on populations of, **290, 340, 448, 493, 565**; measures against, **3, 45, 62, 90, 208, 209, 210, 289, 290, 297, 448, 450, 562, 578, 595, 614, 655, 658, 677**; resistance to acaricides in strains of, **93, 208, 209, 400, 613, 655**; used in tests of acaricides, **138, 207, 209, 210**; unidentified species resembling, **19**; hybridisation of, **20**; survey of data on, **194**
Panscopus torpidus, bionomics of, on raspberry in Washington, **22**
Panstenon assimilis (*oxylus*), predacious on Delphacids in Finland, **471**
Pansy, *Myzus persicae* on, in India, **258**
Pantorhytes, measures against species of, on cacao in Territory of Papua and New Guinea, **671**
Pantorhytes biplagiatus, **671**
Pantorhytes plutus, **671**
Pantorhytes proximus, **671**; on cacao in New Guinea, **295**; measures against, **295**
Pantorhytes quadripustulatus, **671**
Pantorhytes szentivanyi, **671**
Papaver somniferum, aphids on, in Germany, **356**; *Stenocarus fuliginosus* on, in Yugoslavia, **55, 56**
Papaya, Trypetids infesting, in Hawaii, **490, 492**; restriction on import of, into continental U.S.A., **492**; metabolism of bromides in, **492**; toxicity of insecticides to, **490**
Paper, oviposition by *Agrotis ipsilon* on, **593**; treatments of, against stored-products pests, **232**
Paper Chromatography, of *Formica* spp., **348**; comparison of amino-acid contents of *Sitophilus* spp. by, **449**; of termite metabolites, **520**; detection of insecticide residues in water by, **208**; determination of insecticides by, **37, 358, 617, 696**
Papilio demodocus, sprays against, on lemon in Persia, **331**; parasite of, **331**
Papua and New Guinea, Territory of, pests of cacao in, **236, 671**; *Nacoleia octasema* on banana and other plants in, **670**; parasites of *N. octasema* in, **671**; list of insects on economic plants in, **237**
Parabates virgatus, parasitic on *Boarmia bistortata* in Holland, **241**
parabile, Trogoderma
Paraclemensia acerifoliella, bionomics and feeding habits of, on deciduous trees in Ontario, **567**
Paracolobactrum aerogenoides, in intestine of *Pseudaletia unipuncta*, **402**
Paralobesia viteana, sprays against, on vines in New York, **82, 577**
Paramyelois transitella, on walnut and almond in California, **658**; in stored products, **537**; traps in relation to flight periods of, **658**; larval characters of, **537**
Paranagrus optabilis (see *Anagrus*)
Paranthrene tabaniformis (on poplar), in France, **206**; bionomics of, in Italy, **542**; insecticides against, **542**
Parapsyllaephagus adulticolus, **230**
Parasarcophaga affinis (see *Agria*)
Parasarcophaga pseudoscoparia (see *Sarcophaga*)
Parasarcophaga uliginosa (see *Sarcophaga*)
Paratetranychus pilosus (see *Panonychus ulmi*)
Paratetranychus ununguis (see *Oligonychus*)
Paratheresia claripalpis (parasitising Pyralids), in Mexico, **26**; in West Indies, **26, 279**

Parathion, against aphids, **21, 30, 186, 187, 192, 204, 206, 262, 285, 286, 324, 351, 397, 530, 547, 556, 655**; resistance to, in strains of aphids, **156, 262**; against Coccids, **30, 38, 99, 103, 150, 181, 182, 423, 447, 458**; diverse effects of, on *Ceroplastes destructor*, **182**; against Pentatomids, **35, 331, 677**; against other Hemiptera, **34, 50, 125, 128, 190, 344, 391, 502, 622, 655**; against Curculionids, **3, 37, 88, 260, 327, 548, 573, 655**; against other Coleoptera, **174, 191, 211, 246, 322, 418, 553**; question of resistance to, in strains of *Conoderus falli*, **503**; against Agromyzids, **21, 29, 459, 502, 559**; against *Contarinia medicaginis*, **132, 550**; susceptibility or resistance to, in strains of *Drosophila melanogaster*, **627, 683**; against Trypetids, **3, 111, 128, 195, 196, 197, 289, 290, 300, 420, 421, 424, 631, 655**; against other Diptera, **15, 422, 602**; against Noctuids, **6, 21, 30, 34, 165, 414, 578, 677**; ineffective against *Rachiplusia nu*, **647**; against Pyralids, **318, 489, 616**; hatching of eggs of *Ostrinia nubilalis* inhibited by, **82**; against Tortricids (*sens. lat.*), **3, 39, 60, 67, 90, 187, 188, 189, 242, 247, 266, 318, 546, 548, 558, 646**; against other Lepidoptera, **34, 38, 194, 197, 246, 296, 321, 331, 420, 440, 490, 536, 542, 544, 547, 554, 581, 632, 636, 655, 669, 677**; tests and uses of, against grasshoppers and locusts, **148, 296, 528, 621**; against *Gryllotalpa*, **418**; against Hymenoptera, **198, 588**; against *Thrips* spp., **291**; against mites, **3, 60, 134, 166, 285, 287, 288, 297, 309, 319, 332, 395, 396, 614, 617, 655**; resistance to, in strains of mites, **50, 82, 400, 635, 656, 691**; effects of, on beneficial arthropods, **30, 65, 88, 192, 204, 423**; comparative toxicity of, to arthropods, **155**; factors affecting persistence and toxicity of, **38, 186, 578**; mode of action of, **537**; toxicity of, to mammals, **616**; hazards associated with use of, **35, 447, 489, 536**; in aerosols, **134, 188, 189, 324**; in baits, **418**; in dusts, **34, 35, 132, 174, 186, 194, 197, 246, 262, 391, 420, 550, 553, 554, 655**; in sprays, **3, 21, 29, 30, 34, 37, 38, 39, 50, 60, 65, 67, 88, 90, 99, 103, 128, 132, 148, 150, 165, 166, 181, 182, 187, 190, 191, 196, 197, 198, 204, 206, 211, 242, 246, 247, 258, 266, 285, 287, 289, 290, 291, 296, 297, 300, 309, 318, 319, 321, 322, 324, 331, 332, 344, 351, 361, 395, 396, 397, 418, 420, 421, 422, 423, 440, 458, 459, 489, 490, 536, 542, 544, 546, 547, 548, 550, 553, 554, 556, 558, 559, 573, 578, 581, 602, 616, 621, 631, 646, 647, 669, 677**; in bait-sprays, **111**; applied from aircraft, **166, 655**; as deposit, **327, 616**; trunk applications of, **37, 103, 542**; as plant dip, **617**; soil treatment with, **260, 503**; systemic action of, **397**; vapour toxicity of, **683**; development of *Beauveria bassiana* inhibited by, **393**; effects of, on plants, **242, 556**; tolerance of peach saplings to, **258**; residues of, in plants and plant products, **46, 90, 197, 361, 460, 573, 632**; tolerance limit for, **361**; bioassay of, **90**; and BHC, **296, 331**; and copper salts, **195, 196, 197, 420, 421, 631**; and DDT, **60, 197, 198, 262, 290, 331, 420, 544, 550, 632, 677**; and demeton, **393**; and dieldrin, **291**; and dimethoate, **196**; and ethion, **422**; and malathion, **198, 550**; and oil emulsions, **99, 125, 242, 361, 395, 396, 423, 542, 544, 546, 547**; and polyhedrosis virus, **6**; and tobacco-leaf decoction, **286**; and toxaphene, **21, 503**

Paratoil, containing parathion (*q.v.*), **544**

Pardalaspis quinaria, map of distribution of, **389**

pardalina, *Locustana*; *Myiopardalis*

Paris Green, in baits for *Crambus caliginosellus*, **15**

parkeri, *Tersilochus*

Parlatoria blanchardii, map of distribution of, **212**

Parlatoria camelliae, on *Citrus* in Sicily, **198**; natural enemies of, **198**

Parlatoria oleae, on olive in California, **353**; *Aphytis maculicornis* used for control of, **353**

Parlatoria pergandii, on *Citrus* in Florida, **22**; effects of cover crops on populations of, **22**; *P. camelliae* considered as variety of, **198**

Parnara guttata, effects of crowding on larvae of, **672**

Parthenolecanium (see *Eulecanium*)

parvipuncta, *Atherigona*

parvus, *Pimplopterus*

Parzate (see Zineb)

pascuorum, *Habrolepis*

Passerinia fragaefolii (see *Capitophorus*)

Pasture (see Grasses)

Patasson, parasitising Coleoptera in France, **338, 339**

Patasson conotracheli, egg-parasite of *Hypera variabilis* in U.S.A., **585**

Pauridia peregrina (parasitising *Planococcus citri*), in California, **419**; introduced into Italy, **419**; bionomics of, **419**

pavida, *Pales* (*Ctenophorocera*)

PCPPCBS (see Chlorfenson)

Pea, pests of, in Britain, **62, 343, 388, 557**; *Macrosiphum pisum* on, in Bulgaria, **322**; *M. pisum* on, in Canada, **365**; *Heliothis armigera* ovipositing on, in China, **287**; *Sitona* spp. on, in Czechoslovakia, **69**; *Cydia nigricana* on, in Finland, **64**; *M. pisum* on, in Germany, **427**; *Melanagromyza phaseoli* on, in India, **532**; pests of, in U.S.A., **267, 273, 649**; effect of sowing date on infestation of, by *C. nigricana*, **64**; *Macrosiphum caraganae* not surviving on, **567**; varietal susceptibility of, to biotypes of *M. pisum*, **365**; composition of, in relation to nutrition of *Myzus persicae*, **485**; virus diseases of, **649, 650**; effect of growth of, on insecticide deposits, **343**; insecticide residues on, **266, 267, 585**

Pea, Sweet (see *Lathyrus odoratus*)

Pea Moth (see *Cydia nigricana*)

Peach, *Ceratitis* spp. on, in S. Africa, **435**; pests of, in Argentina, **399, 646**; pests of, in Austria, **65, 67, 688**; pests of, in Bulgaria, **394, 415**; pests of, in France, **300, 423**; pests of, in Holland, **42, 397, 439**; pests of, in Italy, **208, 210, 289, 421**; pests of, in Ontario, **214, 218, 600, 664, 665**; *Argyrotaenia pulchellana* on, in Switzerland, **40**; *Polydrusus cervinus* on, in Turkey, **36**; pests of, in U.S.A., **16, 17, 90, 350, 490, 578, 580**; pests of, in Yugoslavia, **326**; vectors of virus diseases of, **17, 350**; *Myzus persicae* overwintering on, **397, 688**; competition between Tetranychids on, **600**; translocation of antibiotics in, **578**; systemic activity of insecticides in, **17, 208**; dip treatments of, **580**; effects of insecticides on, **17, 258**; insecticide residues on, **16, 90**

Peach Twig Borer (see *Anarsia lineatella*)

Pear, pests of, in S. Africa, **111, 112**; pests of, in Austria, **65, 295, 473**; pests of, in Britain, **63, 559**; pests of, in British Columbia, **485, 505, 510, 596, 666**; pests of, in Bulgaria, **189, 321, 393, 415, 416, 418**; *Psylla* spp. on, in Holland, **343**; pests of, in Italy, **38, 208, 234, 248, 486, 543, 677, 678**; *Quadraspidiotus ostreaeformis* on, in New Zealand, **181**; *Stephanitis pyri* on, in Persia, **128**; pests of, in Poland, **185; 332, 392**; *Anthonomus piri* on, in Turkey, **35**; pests of, in U.S.A., **21, 150, 358, 485, 486, 496, 657**; influence of, on egg production by *Hyphantria cunea*, **295**; relation of *Psylla pyricola* to decline of, **486**; systemic activity of dimethoate and analogue in, **208**; toxicity of acaricides and antibiotics to, **450, 578, 596**; insecticide residues on, **111, 496**

Peccary, *Cadra cautella* infesting hides of, **396**

pecosensis, Zenillia (*Phryxe*)

pectinicornis, Ptilinus

Pectinophora gossypiella (on cotton), in Aden, **228**; in Ceylon, **618**; in Colombia, **608**; in Egypt, **28, 30, 31, 32, 34**; in Formosa, **613**; in Morocco, **113**; in Sudan, **433**; in U.S.A., **87, 160, 360, 362**; other food-plants of, **31, 608**; bionomics of, **28**; factors affecting development of, **28, 305**; factors affecting duration of diapause in, **28, 31, 32, 34, 35, 160, 305**; population fluctuation in, **499, 500**; chemical composition of stages of, **34**; influence of wavelength on attraction of, to light, **239**; estimation of losses caused by, **360**; larval development of, inhibited by *Aspergillus* spp., **150**; chemical control of fungal contaminants in artificial diets for, **150, 151**; tests of insecticides against, **34, 113, 360, 499, 500**; effects of DDT on lifespan and fecundity of, **149**; phorate granules ineffective against, **613**; other measures against, **87, 113, 160, 362, 500**

Pectinophora scutigera, DDT against, on cotton in Queensland, **136**

pectoralis, Limonius

pedalis, Carbula; *Pimpla*

Pediobius coffeicola, parasitising *Leucoptera coma* in Congo, **668**

Pediobius foveolatus, bionomics of, parasitising *Epilachna* spp. in India, **531**

Pediobius saulius, parasitising *Lithocolletis blancardella* in Italy, **330**; parasite of, **330**

Pegomyia betae (*hyoscyami*, auct.) (on beet), in Czechoslovakia, **623**; in Poland, **476**; in Sweden, **638**; in U.S.S.R., **317**; bionomics of, **317**; effects of temperature on immature stages of, **317**; parasite of, **623**; sprays against, **476**; demeton ineffective against, **623**

pegomyiae, Phygadeuon

pelargonii, Macrosiphum (*Acyrthosiphon*) (see *M. malvae*)

Pelargonium (Geranium), *Macrosiphum malvae* on, in Austria, **67**; *Trialeurodes vaporariorum* transmitting *Xanthomonas pelargonii* to, **648**

Pelecystoma harrisinae, parasitising *Sibine apicalis* in Costa Rica, **492**

pelekassi, Aculus

pellucida, Camnula; *Diaphnidia*; *Javesella* (*Calligypona, Fulgora*)

peltigera, Heliothis (*Chloridea*)
Pemphigus, food-plant relationships of species of, in N. America, **91, 92**
Pemphigus balsamiferae, on beet and poplar in U.S.A., **92**; question of identity of, **92**
Pemphigus betae (see *P. populivenae*)
Pemphigus bursarius, on endive in Austria, **67**; on lettuce and poplar in California, **79**; transmission of lettuce mosaic by, **79**
Pemphigus populivenae, alternation of, on poplar and beet in California, **92**; on other plants, **92**; fungus disease of, **92**; *P. betae* considered as synonym of, **92**
penicillifera, Hylemya (*Phorbia*)
Pennisetia marginata, bionomics and parasite of, on cultivated *Rubus* spp. in British Columbia, **595**
Pennisetum, Dactylispa nigritula on, in Chad and Senegal, **107**; (stored), BHC treatment of, against pests, **541**
Pennisetum typhoides, development of *Chilo zonellus* on, **258**
Pennsylvania, *Panonychus ulmi* on apple in, **93**; *Argyrotaenia velutinana* on vines in, **266**; *Sitona hispidulus* on red clover in, **498**; parasite of *Hypera punctata* in, **148**
pennsylvanica, Amara (*Curtonotus*)
pennsylvanicus, Harpalus
Pentac (see Decachlorobi-2,4-cyclopentadien-l-yl)
Pentachlorophenol, treatment of timber with, against bark-beetles, **345**
pentagona, Pseudaulacaspis
Pentalitomastix nacoleiae, parasitising *Nacoleia octasema* in New Guinea, **671**
Pentalonia nigronervosa, flight habits of, in Dutch Guiana, **438**; banana virus not transmitted by, **649**
Pentarthrum huttoni, infesting timber in Britain, **173**
Pentatrichopus (see *Capitophorus*)
Peppers (see *Capsicum*)
Perchloroethylene, lipoid solubility of imidazole increased by, **260**
Percussion, review of injuries to insects by, **294**
perdistinctus, Campoletis
peregrina, Pauridia; *Sarcophaga*
Peregrine Falcon (see *Falco peregrinus*)
Perezia fumiferanae, infecting *Choristoneura fumiferana* in Quebec, **659**
perforans, Sinoxylon; *Xyleborus*
Pergandeida (see *Aphis*)
pergandii, Parlatoria
Periclista albipennis, on cork oak in Portugal, **464**; parasite of, **464**
Peridroma saucia, on tomato in Italy, **677**; in Ontario, **93**; insecticides against, **93, 677**
Perilampus, hyperparasite of *Operophtera brumata* in Germany, **102**
Perilampus hyalinus, bionomics and identity of, parasitising *Neodiprion swainei* in Quebec, **596**; as hyperparasite of *N. swainei*, **597**; other hosts of, **596, 597**
Perilissus lutescens, parasitising *Athalia rosae* in Germany, **684**
Perilloides (*Perillus*) *bioculatus* (predacious on *Leptinotarsa decemlineata*), in Germany, **474**; introduced into Poland, **474**
Periplaneta americana, activation of azinphos-methyl by tissue preparations from, **108**; penetration of integument of, by BHC isomers, **615**; used in tests of insecticides, **8, 521**
Perkinsiella saccharicida (on sugar-cane), in Madagascar, **233, 441, 513, 514, 515**; in Réunion, **515**; map of distribution of, **212**; transmitting Fiji disease, **233, 513**; bionomics and parasites of, **513**; measures against, **233, 234**; endrin ineffective against, **441**
perla, Chrysopa
perniciosi, Prospaltella
perniciosus, Quadraspidiotus (*Aspidiotus, Disaspidiotus*); *Tyrophagus*
Perniphora robusta, parasitising *Trypodendron lineatum* in Czechoslovakia, **252**; parasite of, **252**
Peromyscus leucopus, predacious on larvae of *Neodiprion nanulus nanulus* in Wisconsin, **5**
Perotis lugubris, bionomics of, on fruit trees, etc. in Bulgaria, **418**; sprays against, **418**
perplexus, Pilophorus
perpusilla, Pyrilla
Persia, cereal pests in, **127, 313, 314, 438, 519**; *Citrus* pests in, **124, 331**; *Stephanitis pyri* on fruit and forest trees in, **128**; outbreaks of *Dociostaurus maroccanus* in, **175**; *Cryptolestes turcicus* in flour mills in, **126**; beneficial insects in, **124, 127, 331, 353**; check list of arthropods of agricultural importance in, **107**
persicae, Myzus (*Myzodes*)
persimilis, Phytoseiulus
Persimmon, *Anastrepha* spp. on, in Brazil, **446**
Perthane (see Ethyl-DDD)
Petasites hybridus (*vulgaris*), *Hydroecia petasitis* on, in Switzerland, **280**
petasitis, Hydroecia
petersoni, Cinara

Petrobia latens (on wheat), in India, **415**; in Kansas, **166**; tests of acaricides against, **166**
Petrol, attractiveness of logs to bark-beetles increased by, **354**
Phacelia tenacetifolia, experiments with, as supplementary food of *Aphytis proclia*, **72**
Phaenobremia aphidovora, predacious on *Brevicoryne brassicae*, **518**
Phaenops cyanea (see *Melanophila*)
phaeogaster, Cosmopteryx
Phaeogenes, parasitising *Dioryctria sylvestrella* in Italy, **542**
Phaeogenes hariolus, parasitising *Choristoneura pinus* in Wisconsin, **490**
Phalaris arundinacea, Hydroecia micacea on, in Germany, **280**
Phalera bucephala, bionomics of, on chestnut in Bulgaria, **189**
Phanerotoma saussurei, parasitising *Maliarpha separatella* in Madagascar, **442**
Phaonia trimaculata, parasitising *Cleonus mendicus* in Italy, **331**
pharaonis, Monomorium
Pharoscymnus setulosus, predacious on *Aspidiotus hederae* in Sicily, **198**
phaseoli, Melanagromyza (*Agromyza*)
Phaseolunatin, in relation to food-plant selection by *Epilachna varivestis*, **575**
Phaseolus (see Beans)
Phaseolus aconitifolius, Melanagromyza phaseoli on, in India, **532**
Phaseolus mungo, Melanagromyza phaseoli on, in India, **532**
Phaseolus vulgaris (see Beans)
Phasiane clathrata (see *Chiasmia*)
Phaulacridium vittatum, in Australia, **443**; dispersal of, **444**
Pheidole megacephala, associated with *Dysmicoccus brevipes* in Ivory Coast, **524**; labelled with radioisotopes, **524**
Pheidole pallidula, predacious on *Sinoxylon perforans* in Italy, **543**
Phenkapton, tests and uses of, against Tetranychids, **207, 209, 319, 424, 635**; resistance to, in strains of Tetranychids, **613, 691**; toxicity of, to insects, **187, 424**; development of *Beauveria bassiana* unaffected by, **393**; in sprays, **187, 290**; systemic action of, **319**; and DDT, **187**
Phenol, as synergist with imidazole, **259**
Phenyl Sulphone, factors affecting toxicity of, to eggs of *Tetranychus telarius*, **139**
Philaenus leucophthalmus (*spumarius*), insecticides against, on lucerne in U.S.A., **88, 89, 148, 157**
Philippines, insects infesting dried garlic in, **288**; use of radioisotopes in, **525**
Philodendron, Coccus hesperidum on, in Italy, **545**
Philodromus, predacious on *Roeselia lugens* in Queensland, **390**
Philosamia cynthia (see *Attacus*)
Phleum pratense, relation of, to infestation of oats by *Calligypona pellucida* in Finland, **63**; insecticide residues on, **267**
phloeocoptes, Aceria (*Eriophyes*)
Phloeomyzus redelei, on poplar in Holland, **106**
Phloeosinus armatus, bionomics of, on conifers in Greece, **59, 60**
Phloeosinus thujae, on juniper in Austria, **683**
Phobocampe crassiuscula, parasitic on Geometrids in Germany, **102**
phoenicis, Brevipalpus
Phoma herbarum medicaginis, effect of *Macrosiphum pisum* on infection of lucerne by, **648**
Phonopate frontalis, on date palm in Iraq, **540**
Phoracantha semipunctata, on *Eucalyptus* in Israel, **464**
Phorate, against Agromyzids, **29, 80, 495**; against Cecidomyiids, **298, 367**; against other Diptera, **425, 560**; against aphids, **17, 18, 61, 81, 99, 267, 285, 366, 495, 612**; against other Hemiptera, **5, 274, 307, 612**; against Coleoptera, **154, 453, 646**; against Lepidoptera, **274, 414, 669**; ineffective against *Pectinophora gossypiella* and *Earias fabia*, **613**; toxicity of, to *Locusta migratoria*, **621**; against sawflies, **16, 157**; against thrips, **11, 18, 285, 495**; against mites, **11, 285, 495, 617**; comparative toxicity of, to arthropods, **155**; toxicity of, to man, **669**; anticholinesterase activity of, **80, 460**; metabolism of, in tomato, **79, 80**; phytotoxicity of, **61, 157, 285, 583, 613, 617**; in dusts, **425, 617**; in granules, **5, 11, 16, 17, 18, 61, 80, 99, 154, 307, 366, 453, 495, 560, 583, 612, 613**; in sprays, **285, 367, 621, 669**; seed treatment with, **29, 60, 61, 157, 274, 298, 425, 495, 583, 613**; treatment of planting material with, **366, 617**; soil treatment with, **5, 80, 81, 99, 267, 274, 453, 495, 560, 583, 613**; tests of systemic action and other methods of application of, **11, 16, 17, 18, 60, 61, 154, 285, 646**; types of soil in relation to systemic activity of, **298**; residues of, in plants, **61, 79, 274, 307, 572**; analysis and determination of, **460, 572**
Phorbia (see *Hylemya*)
Phormia terraenovae, Nasonia vitripennis reared on, **690**; diffusion of oil films on integument of, **212**
Phorocera tortricis, parasitising *Choristoneura pinus* in Wisconsin, **490**

Phosdrin (see Mevinphos)
Phosphamidon, against aphids, **14, 30, 81**; resistance to, in strains of *Therioaphis maculata*, **156**; against Coccids, **30, 96, 293, 423**; against *Empoasca*, **698**; against Coleoptera, **85, 698**; against *Dacus oleae*, **128, 197**; against *Fenusa pusilla*, **76**; against Lepidoptera, **14, 30, 62, 76, 77, 85, 88, 581, 592, 664**; susceptibility or resistance to, in strains of *Tetranychus telarius*, **9, 11, 691**; effects of, on beneficial insects, **30, 423**; toxicity of, to fish, **592**; in dusts, **197, 266**; in granules, **81**; in sprays, **14, 30, 62, 76, 77, 81, 85, 88, 96, 128, 197, 266, 423, 581, 698**; applied from aircraft, **88**; soil treatment with, **81**; as plant dip, **293**; tests of systemic action and other methods of application of, **11, 592, 665**; timing of applications of, **62**; residues of, on plants, **266**; factors affecting degradation of, **460**; and DDT, **85**; survey of data on, **298**
Phosphine, as fumigant (see Aluminium Phosphide)
Phosphorothioic Acid, as metabolite of insecticides, **617**
Phosphorus (as plant nutrient), effects of, on varietal susceptibility of lucerne to *Therioaphis maculata*, **352**
Phosphorus, Radioactive, used in studies of insects, **523, 524, 525, 653**; effects on insects of γ-radiation from, **485**; *Cecidophyopsis ribis* labelled with, **342**; insecticides labelled with, **116, 148, 182, 357, 467, 696**
Phosphorus virescens, on cacao and *Cola* in Nigeria, **119**
Phostex (mixture of bis(dialkyloxyphosphinothioyl) disulphides), toxicity of, to Coleoptera, **383**; in sprays against *Petrobia latens*, **166**; persistence of residues of, **383**
Phostoxin, **301**
Photoelectric Apparatus, for measuring food consumption by leaf-feeding insects, **245**
Photoperiod, influence of: on *Cydia pomonella*, **644**; on parasite-host synchronisation, **389**; on aphid survival on lucerne, **353**; on aggregation of grasshoppers, **647**; on *Mamestra brassicae*, **294, 407**; on diapause in insects, **160, 333, 386, 387, 407, 615**; on development of *Aculus lycopersici*, **20**; on oviposition by *Typhlodromus pyri*, **143**
Photosensitivity (see Light)
Phragmataecia, species of, on sugar-cane in Vietnam, **526**
Phragmatobia fuliginosa, bionomics of, on apple in Bulgaria, **189**
Phryxe (see *Zenillia*)
Phthorimaea ocellatella (see *Scrobipalpa*)
Phthorimaea operculella, in Bulgaria, **553, 554**; in Greece, **554**; in Queensland, **137**; in Vietnam, **526**; on potato, **526, 554**; on tobacco, **137, 554**; on other solanaceous plants, **554**; bionomics ecology and parasites of, **554**; measures against, **137, 526, 554**; resistance to DDT in strains of, **137**
phthorimaeae, Campoplex
Phycita orthoclina, bionomics of, on tamarind and *Bombax malabaricum* in Kerala, **675**
Phygadeuon pegomyiae, parasitising *Pegomyia betae* in Czechoslovakia, **623**
Phygadeuon talitzkii sp. n., parasitising *Hoplocampa* spp. in U.S.S.R., **136**
Phyllocnistis citrella, factors affecting populations of, on *Citrus* in Arabia, **33**; insecticides against, **34**
Phyllocnistis populiella, characters of immature stages of, **572**
Phyllocoptruta (*Phyllocoptes*) *oleivora* (on *Citrus*), in Brazil, **308**; in Bulgaria, **676**; in Formosa, **611**; in U.S.A., **22, 371**; unaffected by cover-crop cultivation, **22**; acaricides against, **308, 371, 611, 676**
Phyllotreta, species of, on crucifers in Germany, **428, 471**; in U.S.S.R., **516**; rot associated with, **471**; seed treatment against, **428**
Phyllotreta atra, insecticides against, on cabbage in Bulgaria, **322**
Phyllotreta nigripes, insecticides against, on cabbage in Bulgaria, **322**
Phyllotreta undulata (on crucifers), in Bulgaria, **322**; trap-catches of, in Denmark, **427**; in Germany, **471**; rot associated with, **471**; insecticides against, **322**
Phylloxera vitifoliae (*vastatrix*) (on vines), in Bulgaria, **187**; in China, **286**; in Ontario, **98**; in S. Australia, **182**; in U.S.S.R., **253, 254**; bionomics of, **187, 286**; natural enemies of, **187**; relation of vine age to infestation by, **254**; measures against, **98, 182, 187, 253**
Phymata fasciata, predacious on *Adelphocoris superbus* in Alberta, **140**; factors affecting populations of, **140**
Phymatodes glabratus, on juniper in Austria, **683**
Phyrdenus muriceus, characters of stages of, on tomato in Arizona, **23**
Physalis angulata, aster-yellows virus not transmitted to, by *Macrosteles fascifrons*, **649**

Physalis floridana, aster-yellows virus not transmitted to, by *Macrosteles fascifrons*, **649**; symptoms of tomato virus in, **137**
Physokermes piceae, on spruce in Yugoslavia, **55**
Phytocoris dimidiatus, predacious on *Cydia pomonella* in Nova Scotia, **225**
Phytodecta fornicata, on lucerne in Yugoslavia, **56**; occurrence of aberrations of, **56**
Phytometra chalcites (see *Plusia*)
Phytometra gamma (see *Autographa*)
Phytomyza atricornis, on lucerne in Bulgaria, **322**
Phytomyza heringiana, bionomics and parasites of, on apple in Italy, **629**
Phytomyza ilicicola (*ilicis*, auct.), on *Ilex* in U.S.A., **51, 76**; sprays against, **51, 76**
Phytomyza lateralis (on chicory), in Belgium, **52**; in France, **458**; measures against, **52, 234, 459**
Phytomyza minuscula, sprays against, on columbine in Connecticut, **76**
Phytomyza rufipes, bionomics of, on calabrese in England, **558**; parasite and hyperparasite of, **558**; sprays against, **559**
Phytophaga, on bitterbrush in Idaho, **580**
Phytophaga destructor (see *Mayetiola*)
Phytophthora palmivora, fumigation with propylene oxide against, in stored cacao, **117**
Phytoptus ribis (see *Cecidophyopsis*)
Phytosanitary Inspectors, International Refresher Course for, **400**
Phytoseiulus persimilis (*riegeli*) (predacious on Tetranychids), in Germany, **439, 491**; in Holland, **439**; introduced into U.S.A., **491**; factors affecting development of, **439**; effects of insecticides on, **491**
Phytoseius macropilis (predacious on Tetranychoids), in Austria, **65**; in Germany, **624**; destroyed by other arthropods, **624**; effects of low temperatures on, **600**
Picea, new pest of, in Alaska and Canada, **702**; *Chermes* spp. on, in India, **598**
Picea abies, *Eucordylea piceaella* on, in Canada, **595**; pests of, in Germany, **334, 337, 396, 629**; *Rhopalosiphum abietinum* on, in Europe, **243**
Picea engelmanni, pests of, in Canada, **216, 594, 702**; pests of, in U.S.A., **219, 702**
Picea excelsa (see *P. abies*)
Picea glauca, pests of, in Canada, **216, 283, 284, 572, 592, 593, 595, 662, 663**; *Oligonychus ununguis* on, in Germany, **334**; pests of, in U.S.A., **492, 595**; systemic activity of insecticides in, **592**
Picea mariana, pests of, in Canada, **216, 572, 594, 595, 666**; *Choristoneura fumiferana* on, in U.S.A., **12, 492**; secondary infestation of logs of, by Lamiids and Siricids, **12**
Picea omorika, resistance of, to pests, **629**; experiments with sap of, against *Gilpinia* spp., **629**
Picea pungens, *Eucordylea piceaella* on, in Canada, **595**; *Oligonychus ununguis* on, in Germany, **334**
Picea rubens, Lepidoptera on, in Canada, **572, 595, 667**
Picea sitchensis, *Psylla melanoneura* on, in Britain, **230**; pests of, in Germany, **242, 243, 334, 396, 464**
picea, *Phytodecta fornicata*; *Xylopertha*
piceae, *Chermes* (*Adelges*); *Dasyneura*; *Physokermes*; *Pissodes*
piceaella, *Eucordylea* (*Recurvaria*)
piceus, *Attagenus* (see *A. megatoma*)
picivorus, *Pachylobius*
pictella, *Liriomyza*
pictus, *Cirrospilus*; *Rhammatocerus*
pictipes, *Aegeria* (*Synanthedon*)
Pieris, on crucifers in Vietnam, **526**
Pieris brassicae (on crucifers), in Czechoslovakia, **69**; in Minorca, **680**; in Poland, **392**; on cabbage, **245, 524**; measurement of food consumption by, **245**; parasites of, **328, 388, 524, 680**; labelled with ^{32}P, **524**; experiments with bacteria and toxic principle of, **407**; tests and uses of *Bacillus thuringiensis* against, **50, 69, 95, 245, 392, 481**
Pieris rapae (on crucifers), in China, **286**; in New Zealand, **309**; in Minnesota, **414**; in Ontario, **510**; in Queensland, **390**; effects of, on yields of cabbages, **414**; sampling methods in population study of, **510**; parasites of, **286, 309**; insecticides against, **390**
Piesma, on beet in Poland, **186, 391**; adult habits of, **391**; dusts against, **391**
Pikonema alaskensis (see *Pachynematus*)
Pilophorus perplexus, predacious on *Cydia pomonella* in Nova Scotia, **225**
pilosus, *Metatetranychus* (*Paratetranychus*) (see *Panonychus ulmi*); *Xylechinus*
Pimelia inexpectata, predacious on *Schistocerca gregaria* in India, **621**
Pimpernel, Scarlet (see *Anagallis arvensis*)
Pimpla, parasitising *Pieris rapae* in China, **286**
Pimpla examinator (see *P. turionellae*)
Pimpla instigator (parasitising Lepidoptera), **72, 73**; in Bulgaria, **190**; in Minorca, **680**; method of rearing, **680**
Pimpla padellae (see *P. turionellae*)

Pimpla pedalis, parasitising *Lymantria dispar* in New York, **665, 666**
Pimpla pomorum (see *Ephialtes*)
Pimpla turionellae, parasitising *Cydia pomonella* in Rumania, **319**
Pimpla zenobia, parasitising *Rhyacionia buoliana* in Argentina, **645**
Pimplopterus parvus, parasitising *Dioryctria reniculella* in Quebec, **663**
Pindone, sodium salt of (see Pivalyn)
Pine, *Rhyacionia buoliana* on, in Argentina, **645**; Diprionines on, in Austria, **473**; pests of, in Britain, **52, 169**; pests of, in Canada, **9, 24, 145, 146, 147, 213, 220, 224, 447, 576, 596, 597, 601, 661, 662, 702**; pests of, in Czechoslovakia, **68, 69, 70, 251, 333**; pests of, in France, **206, 549, 680**; pests of, in Germany, **429, 463, 464, 628**; *Psylla pyrisuga* in relation to, in Holland, **343**; *Dioryctria* spp. on, in Italy, **541**; *Pissodes nitidus* on, in Japan, **103**; pests of, in Mongolia, **254, 255**; *Sirex noctilio* and fungus disease of, in New Zealand, **445, 465**; Coleoptera infesting timber of, in Norway, **345**; pests of, in Poland, **464, 465**; pests of, in Spain, **678, 679, 680**; *R. resinella* on, in Sweden, **41**; pests of, in U.S.S.R., **71, 254, 255, 256**; pests of, in U.S.A., **4, 24, 25, 77, 84, 147, 166, 220, 261, 354, 452, 490, 506, 566, 576, 639, 702**; pests of, in Yugoslavia, **53, 193, 194, 327, 463**; factors affecting degree of infestation of, **70, 220, 224, 506, 629, 661**; effects of *Myelophilus piniperda* on timber increment of, **465**; experiments on attractiveness of terpenes of, to *M. piniperda*, **59**; *Leptoglossus occidentalis* damaging seed of, **576**; comparative susceptibility of species of, to *R. buoliana*, **452**; Thysanoptera overwintering in bark crevices of, **169**; influence of, on parasite of *R. buoliana*, **213**; attraction of bark-beetles to, **354**; Coleoptera in timber of, **345, 431, 467**; attractants for termites in timber of, **494**; high-frequency radiation of timber of, against borers, **52**
Pine, Austrian (see *Pinus nigra*)
Pine, Eastern White (see *Pinus strobus*)
Pine, Jack (see *Pinus banksiana*)
Pine, Loblolly (see *Pinus taeda*)
Pine, Lodgepole (see *Pinus contorta*)
Pine, Maritime (see *Pinus pinaster*)
Pine, Monterey (see *Pinus radiata*)
Pine, Mugho (see *Pinus mugo*)
Pine, Ponderosa (see *Pinus ponderosa*)
Pine, Red (see *Pinus resinosa*)
Pine, Scots (see *Pinus sylvestris*)
Pine, Shortleaf (see *Pinus echinata*)
Pine, Slash (see *Pinus elliottii*)
Pine, Stone (see *Pinus cembra*)
Pine, Western White (see *Pinus monticola*)
Pine, Weymouth (see *Pinus strobus*)
Pine, White (see *Pinus strobus*)
Pine Budworm (see *Exoteleia dodecella*)
pinea, Cinara (see *C. pini*)
pineae, Dioryctria; *Holcocera*
Pineapple (*Dysmicoccus* spp. on), **440**; in Ivory Coast, **524**; wilt in relation to, **276**
Pinenes, in sprays against *Leptinotarsa decemlineata*, **476**; in relation to attraction of *Myelophilus piniperda* to *Pinus pinaster*, **59**; development of *Beauveria bassiana* inhibited by, **393**; α-isomer of, **59, 476**; β-isomer of, **476**; and BHC, **393**
Pineus (see *Chermes*)
pinguis, Tylomyza (*Ophiomyia*)
pini, Cinara; *Dendrolimus*; *Diprion*; *Eurytoma*; *Ips*; *Pissodes*; *Taeniothrips*; *Trichogramma cacoeciae*
piniarius, Bupalus
pinicolana, Rhyacionia
pinicolella, Dioryctria reniculella
pinifex, Hylastes (*Hylurgops*)
piniperda, Myelophilus (*Blastophagus*)
piniphilus, Pissodes
piniresinosae, Thecodiplosis
pinivora, Acantholyda
Pinnaspis aspidistrae, on *Sansevieria laurentii* in Italy, **234**
Pinus, new Lepidoptera on, in Guatemala, **431**
Pinus banksiana, Neodiprion swainei on, in Quebec, **220, 596, 603**; pests of, in U.S.A., **24, 97, 490, 506, 639**; sampling unit for *Choristoneura pinus* on, **97**; resistance of, to infestation by *N. nanulus nanulus*, **4**; influence of, on development of *Rhyacionia buoliana*, **506**; effects of defoliation on growth of, **603**
Pinus cembra, Diprionines on, in Austria, **474**; pests of, in Mongolia and U.S.S.R., **254, 255**
Pinus contorta, Pissodes terminalis on, in Canada, **601**; pests of, in U.S.A., **10, 702**
Pinus contorta latifolia, pests of, in Canada, **224, 447, 661, 662**; factors affecting *Dendroctonus ponderosae* on, **224, 447, 661**; *D. ponderosae* in relation to blue-stain infection of, **447**
Pinus echinata, Sirex noctilio infesting, in New Zealand, **445**; *Pachylobius picivorus* on, in Texas, **77**
Pinus elliottii, Sirex noctilio infesting, in New Zealand, **445**; pests of, in U.S.A., **77, 566**

Pinus maritima (see *P. pinaster*)
Pinus montana (see *P. mugo*)
Pinus monticola, attractants for termites in fungus-infested timber of, **494**
Pinus mugo, *Microdiprion pallipes* on, in Austria, **474**
Pinus nigra, Lepidoptera on, in Michigan, **84, 506**; *Diprion pini* on, in Yugoslavia, **53**
Pinus nigra laricio, *Graellsia isabellae* on, in Spain, **680**
Pinus nigra nigra, factors affecting overwintering of *Limothrips cerealium* in bark of, in Britain, **169**
Pinus palustris, *Dioryctria abietivorella* on, in U.S.A., **566**
Pinus pinaster, Coleoptera on, in France, **680**; attractiveness of terpenes of, to *Myelophilus piniperda*, **59**
Pinus pinea, pests of, in Spain, **679, 680**
Pinus ponderosa, pests of, in U.S.A., **219, 220, 354, 451, 506, 702**; attraction of bark-beetles to, **219, 354**
Pinus radiata, *Rhyacionia buoliana* on, in Argentina, **645**; *Conophthorus radiatae* on, in California, **306**; *Sirex noctilio* and fungus disease of, in New Zealand, **445, 465**
Pinus resinosa, pests of, in N. America, **4, 9, 24, 25, 146, 147, 166, 213, 452, 506, 597, 702**; influence of, on development of *Rhyacionia buoliana*, **506**; influence of, on parasite of *R. buoliana*, **213**
Pinus strobus, *Pissodes terminalis* on, in Canada, **60**; *P. nitidus* on, in Japan, **103**; pests of, in U.S.A., **168, 261, 506**; relation of infestation by *P. nitidus* to water supply of, **103**; influence of, on development of *Rhyacionia buoliana*, **506**
Pinus sylvestris, pests of, in Europe, **452, 474**; Lepidoptera on, in Michigan, **84, 506**; pests of, in Ontario, **9, 213**; Lepidoptera on, in Spain, **678, 680**; effects of impregnation of sap wood of, on larval growth of *Hylotrupes bajulus*, **89**; influence of, on development of *R. buoliana*, **506**; influence of, on parasite of *R. buoliana*, **213**
Pinus taeda, *Sirex noctilio* infesting, in New Zealand, **445**; *Pachylobius picivorus* on, in Texas, **77**
pinus, *Choristoneura*
Piper betle, *Geococcus citrinus* on, in India, **640**
Piperonyl Butoxide, effects on toxicity of phosphorus compounds of pre-treatment of *Drosophila melanogaster* with, **683**; effects of, on metabolism of aldrin, **581**; as synergist: with imidazole, **259**; with substituted-phenyl methylcarbamates, **155**; with pyrethrins, **11, 231, 232, 259, 301, 436, 637, 673, 677, 696**
Piperonyl Cyclonene, effects of, on metabolism of aldrin, **581**
pipiens, *Culex*
piri, *Anthonomus*
Pirus (see Pear and *Pyrus*)
pisi, *Aphis* (*Acyrthosiphon*) (see *Macrosiphum pisum*)
pisi, *Contarinia*
Pissodes, key to species of, on conifers in Spain, **679**; survey of data on, **679**
Pissodes engelmanni, relation of, to *P. terminalis*, **601**
Pissodes harcyniae, on spruce in Czechoslovakia, **70**
Pissodes nitidus, on *Pinus strobus* in Japan, **103**; question of water supply in relation to infestation by, **103**
Pissodes notatus (on pines), **679**; in France, **680**; in U.S.S.R., **256**
Pissodes piceae, **679**; bionomics, adult habits and parasite of, on pine in Germany, **429**
Pissodes pini (on pines), **679**; in Czechoslovakia, **70**; in Norway, **345**; treatments of timber against, **345**
Pissodes piniphilus (on pines), **679**; in Czechoslovakia, **70**; in Germany, **464**
Pissodes scabricollis, on spruce in Czechoslovakia, **70**
Pissodes sitchensis, relation of, to *P. terminalis*, **601**
Pissodes strobi, on spruce in Saskatchewan, **601**; not infected by nematode and associated bacterium, **577**; relation of, to *P. terminalis*, **601**
Pissodes terminalis, bionomics and natural enemies of, on pines in Canada, **601**; cytogenetic identification of, **601**
Pissodes validirostris, **679**; on *Pinus pinea* in Spain, **680**
Pissodes yosemite, relation of, to *P. terminalis*, **601**
Pistachio (see *Pistacia vera*)
Pistacia terebinthus, *Eumegastigmus pistaciae* on, in Sicily, **198**
Pistacia vera (Pistachio), pests of, in Sicily, **198, 201**; leaf-eating insects on, in Turkmenia, **40**
pistaciae, *Eumegastigmus* (*Megastigmus*); *Gelechia*
Pisum sativum (see Pea)
pisum, *Macrosiphum* (*Acyrthosiphon*)
pityocampa, *Thaumetopoea*
Pityogenes (see *Ips*)
Pityophthorus lichtensteini, as secondary pest of *Pinus cembra* in Mongolia and U.S.S.R., **255**

Pivalyn (2-pivaloylindane-1,3-dione), effects of, on *Tribolium confusum* in baits for rodents, **21**
placida, *Leucania*
placidus, *Aethecerus*
plagiaticollis, *Castolus*
Plagiolepis pygmaea, on fruit and nut trees in Sicily, **201**; relations of, with other insects, **201**; insecticides against, **201**; question of resistance to insecticides in strains of, **201**
Plagionotus floralis, on lucerne in Yugoslavia, **297**; parasite of, **297**
Plane (see *Platanus*)
Planococcoides njalensis, in Ghana, **115, 116, 118**; and diseases of cacao, **115, 116, 118**; ants associated with, **115, 116**; sprays against, **115, 116**
Planococcus, cacao virus transmitted by, **118**
Planococcus celtis, **118**
Planococcus citri, in W. Africa, **116**; in California, **419**; in Israel, **634**; in Italy, **197, 198, 419**; transmitting virus diseases of cacao, **116, 118**; on *Citrus*, **197, 198, 419, 634**; bionomics of, **635**; ants associated with, **116, 419, 420, 635**; natural enemies of, **198, 419, 420**; effects of sprays against other pests on populations of, **116**
plantaginea, *Anuraphis* (*Dysaphis*, *Sappaphis*)
Plant Protection, symposium on use of biophysics in, **522**; bibliography of, for 1958, **292**
Plant Quarantine, **400**; list of national services of, **106**; guide to regulations of, in U.S.A., **106**
Plant-growth Regulators, effects of, on insects, **347**; penetration of heptachlor spray not enhanced by, **157**
Plastic Bags, for stored products, **668**; effects of, on storage of treated seed, **428**
Platanus (Plane), Coleoptera transmitting canker fungus of, in New Jersey, **351**; *Lymantria dispar* on, in Yugoslavia, **327**
Platanus acerifolia, experiments with Coleoptera and canker fungus of, **351**
Platyedra gossypiella (see *Pectinophora*)
Platymeris rhadamanthus, development and predatory habits of, **172**
Platynota rostrana, bionomics of, on banana fruit in Honduras, **45**; predator of larvae of, **45**; sprays against, **45**
platynotae, *Goniozus*
Platyparea poeciloptera, sprays against, on asparagus in France, **59**
Platypus hintzi, infesting timber in Ghana, **374, 375, 538**
Platysenta sutor, sprays against, on celery in Florida, **21**
plebeja, *Euscelis*
Pleotrichophorus chrysanthemi (see *Capitophorus*)
Pleurotropis (see *Pediobius*)
Plodia interpunctella (in stored products), **466**; in Britain, **537**; in Czechoslovakia, **129**; *Bacillus thuringiensis* isolated from, **129**; measures against, **232, 259**; larval characters of, **537**
Plum, *Aculus fockeui* causing leaf-spot of, in Austria, **67**; *Pammene rhediella* on, in Britain, **559**; pests of, in Bulgaria, **188, 189, 190, 321, 324, 394, 417**; *Eulecanium* spp. on, in Canada, **362, 448**; *Brevipalpus* on, in Egypt, **32**; *Hyalopterus pruni* on, in France, **298**; *Aceria phloeocoptes* on, in Hungary, **133**; *E. corni* on, in New York, **362**; *Quadraspidiotus ostreaeformis* on, in New Zealand, **181**; pests of, in Poland, **185, 332**; *Cydia funebrana* on, in Rumania, **317**; *Hyponomeuta padellus* on, in Switzerland, **636**; *Polydrusus cervinus* on, in Turkey, **36**; pests of, in U.S.S.R., **133, 135**; pests of, in Yugoslavia, **54, 326**; as winter food-plant of *Myzus humuli*, **324**; *Tetranychus telarius* on, **203**
Plum, Myrobalan (see *Prunus cerasifera*)
Plusia chalcites, in New Zealand, **58**; in France, **58**; on tomato in Italy, **677**; bionomics and food-plant preferences, of, **58**; sprays against, **677**
Plusia eriosoma, on cabbage in Ceylon, **618**; fungus infesting, **618**; susceptibility of, to *Bacillus thuringiensis*, **618**
Plusia gamma (see *Autographa*)
Plutella maculipennis (on crucifers), in Ceylon, **618**; in Germany, **471**; in Queensland, **390**; in Vietnam, **526**; rot associated with, **471**; parasites of, **618**; susceptibility of, to *Bacillus thuringiensis*, **618**; insecticides against, **390, 526**
plutellae, *Apanteles*
plutus, *Pantorhytes*
pluviale, *Malacosoma*
Plyac, insecticide sprays not improved by addition of, **13**
Plywood, treatments of, against Coleoptera, **52, 233**
Pnigalio longulus, parasitising *Dacus oleae* in Italy, **197**
Pnigalio mediterraneus, parasitic on *Dacus oleae* in Corsica, **204**; parasite of, **204**
Pnigalio tischeriae, parasitising Nepticulid in Ontario, **221**
Poa annua, *Chloriona furcifera* on, in Japan, **315**

Poa compressa, as food-plant of *Camnula pellucida*, **604**
Poa pratensis, damaged by *Camnula pellucida* in British Columbia, **604**; pests of, in Kentucky, **151, 152, 163**; as food-plant of *C. pellucida*, **604**; *Oscinella* spp. causing silver top of, **151, 152**
poae, *Myzus* (*Rhopalosiphum*)
Podacanthus wilkinsoni, on *Eucalyptus* in Australia, **105**; diapause and parthenogenesis in, **105, 106**
Podagrica orbiculata (*bowringi*), on *Hibiscus cannabinus* in India, **259**
Podagrica pallida, on cotton and *Hibiscus* spp. in Sudan, **431**
Podagrica puncticollis, on cotton and *Hibiscus* spp. in Sudan, **431, 433**; insecticides against, **431**
podanus, *Archips* (see *Archippus oporanus*)
podisi, *Telenomus*
Podisma alpina collina, on deciduous trees in Yugoslavia, **326**
Podisus, larvae of *Eriocampa ovata* attacked by, in Quebec, **3**
Podocarpus dacrydioides, treatment of timber of, against *Ambeodontus tristis*, **138**
poeciloptera, *Platyparea*
poeyalis, *Marasmia*
Pogonomyrmex occidentalis, baits for, in U.S.A., **493**
Poland, pests of beet in, **186, 391, 475, 476**; Lepidoptera on crucifers in, **392**; *Leptinotarsa decemlineata* on potato in, **185, 392, 474, 475, 476**; clover and lucerne pests in, **184, 252**; orchard pests in, **70, 185, 332, 392**; *Steneotarsonemus fragariae* on strawberry in, **331**; forest pests in, **70, 464, 465**; mites in stored products in, **183, 184**; beneficial insects in, **70, 185, 474**; Coccids in, **70**; cutworms in, **474**; Eriophyid mites of, **235**; occurrence and forecasting of pests of cultivated plants in, **235**
poligraphus, *Polygraphus*
Pollination, and bees, **23, 43, 179, 445, 516, 639**; and *Forcipomyia* spp. **229**; possible rôle of insects in, of rubber, **288**; transmission of injurious fungi by insects concerned with, **276**
Polyblastus flavicauda, parasitising *Pristiphora abietina* in Germany, **336**
Polybutenes, tests of, in sprays against arthropods, **150, 210, 595**; ineffective against *Panonychus ulmi*, **290**; mode of action of, **150**; phytotoxicity of, **150, 210**; and fungicides, **150**; and insecticides, **150**
Polychrosis botrana (see *Lobesia*)
polyctena, *Formica*
Polydrusus alaiensis, on pistachio in Turkmenia, **40**
Polydrusus cervinus, on soft fruits in Turkey, **36**
Polyethylene (Polythene) as lining for sacks, **116**; use of, in vine dips, **98**; insecticide sprays not improved by addition of, **13**
Polygonum equisetiforme, *Orgyia dubia* on, in Israel, **478**
Polygraphus poligraphus, on conifers in Czechoslovakia, **69**; traps for, **69**
Polymethyl Methacrylate, use of plate of, in rearing larvae of *Cephus cinctus*, **222**
Polytetrafluoroethylene, barriers of, against insects, **100, 380**
Polythene (see Polyethylene)
polytoma, *Gilpinia*
Polyvinyl Chloride, use of apparatus constructed from, in toxicity tests, **683**
Pomegranate, *Tenuipalpus granati* on, in Bulgaria, **417**
pometaria, *Alsophila*
pomi, *Aphis* (*Aphidula*); *Eotetranychus* (see *E. pruni*)
pomonella, *Cydia* (*Carpocapsa*, *Laspeyresia*); *Rhagoletis*
pomorum, *Anthonomus*; *Ephialtes* (*Pimpla*)
Ponderosa Pine (see *Pinus ponderosa*)
ponderosae, *Dendroctonus*; *Ips*
Popillia japonica, in Canada, **104**; in Japan, **104**; in U.S.A., **104, 369, 486, 575**; possibility of development of, in Europe, **104, 688**; on buckthorn, **575**; aircraft dispersal of, **104**; insecticides against, **369, 486, 575**
Poplar (*Populus*), *Trochilium apiforme* on, in Austria, **293**; *Pemphigus* spp. on, in Canada, **91, 92**; *Saperda carcharias* on, in Czechoslovakia, **250**; pests of, in France, **206, 701**; pests of, in Germany, **685, 701**; *Phloeomyzus redelei* on, in Holland, **106**; pests of, in Italy, **37, 542**; *Cossus cossus* infesting, in U.S.S.R., **73**; *Pemphigus* spp. on, in U.S.A., **79, 91, 92**; pests of, in Yugoslavia, **235, 325, 327**; development of *Cryptorhynchus lapathi* on, **337**; trunk treatment of, **542** (See also *Populus* spp.)
Poppy (see *Papaver*)
Population Studies, of insects, **247, 510, 694**; methods for, **108, 222, 689, 690, 694**; theories on dynamics in relation to, **236**; mathematical models derived from, **573**
populi, *Pachypappella*
populiella, *Phyllocnistis*
populifoliella, *Lithocolletis*
populivenae, *Pemphigus*
populnea, *Saperda*
Populus (see Poplar)

Populus alba, resistance of, to infestation by *Saperda carcharias*, **250**
Populus canescens, *Saperda carcharias* on, in Czechoslovakia, **250**
Populus tremula, *Pachypappella populi* on, in Finland and Sweden, **470**
Populus tremuloides, Lepidoptera on, in Canada, **216, 569**
Populus trichocarpa, *Pemphigus populivenae* on, in California, **92**
Porthetria (see *Lymantria*)
Portugal, pests of cork oak in, **464, 625**; *Tribolium madens* infesting warehouses in, **468**; parasites of *Periclista albipennis* in, **464**
postbrunnea, *Nupserha bicolor*
postfasciatus, *Euscepes*
postica, *Hypera* (see *H. variabilis*)
postvittana, *Epiphyas* (*Tortrix*)
Potasan, effects of pre-treatment with piperonyl butoxide on susceptibility of *Drosophila melanogaster* to, **683**; vapour toxicity of, **683**
Potassium (as plant nutrient), *Chilo suppressalis* unaffected by, **315**; effects of, on varietal susceptibility of lucerne to *Therioaphis maculata*, **352**
Potassium Dihydrogen Phosphate, use of, for labelling insects with ^{32}P, **524**
Potassium O,O-Dimethyl Phosphorodithioate, reaction of dimethoate with, **455**
Potassium Sorbate, ineffective against *Aspergillus* in artificial diets for *Pectinophora gossypiella*, **150**
Potato, *Listroderes costirostris obliquus* on, in Australia, **311**; aphids on, in Austria, **688**; pests of, in Brazil, **702**; aphids on, in Britain, **61, 209**; pests of, in Bulgaria, **323, 554**; *Myzus persicae* on, in Denmark, **426**; *Leptinotarsa decemlineata* on, in France, **636**; pests of, in Germany, **356, 395, 685**; *M. persicae* on, in Holland, **397**; aphids on, in Hungary, **58**; *Agrotis ipsilon* on, in India, **256**; *L. decemlineata* on, in Italy, **678**; aphids on, in New Brunswick, **366**; aphids on, in New Zealand, **180**; *L. decemlineata* on, in Poland, **185, 392, 475, 476**; *L. decemlineata* on, in Rumania, **320**; pests of, in Switzerland, **248, 471**; *L. decemlineata* on, in U.S.S.R., **643**; pests of, in U.S.A., **305, 571, 649, 697**; pests of, in Vietnam, **526**; varietal susceptibility of, to *Empoasca fabae*, **571**; aphids and virus diseases of, **58, 61, 180, 209, 347, 395, 396, 397, 400, 426, 574**; other Hemiptera and virus diseases of, **275, 649**; varietal susceptibility of, to viruses, **397**; insects reared on, **104, 625**; systemic activity of insecticides in, **61, 209, 397**; toxicity of insecticides to, **366**; absence of phosphamidon residues on, **266**; (tubers), *Hydroecia micacea* feeding on, **280**; fumigation of, **554**; insecticide residues in, **366**
Potato Leafhopper (see *Empoasca fabae*)
Potentilla, *Capitophorus* spp. on, in California, **352**
PP175 (see Menazon)
praecox, *Acantholyda pinivora*
praefica, *Prodenia*
praelonga, *Orthezia*
praetiosa, *Bryobia*
Praon dorsale, parasitising *Macrosiphum pisum* in Czechoslovakia, **633**
Praon palitans, parasitising *Therioaphis maculata* in California, **88**; toxicity of insecticides to, **88**
pratensis, *Dichroplus*; *Lygus*; *Oligonychus*
pratti, *Neodiprion*
Praxithea derourei, bionomics of, on fruit and forest trees in Argentina, **646**; measures against, **646**
Prays oleellus (on olive), in Greece, **321**; in Italy, **38, 197, 208, 329, 420, 632**; insecticides against, **38, 197, 208, 321, 330, 420, 632**
prelli, *Chermes* (*Dreyfusia*)
prima, *Pseudhomalopoda*
Prince Edward Island, *Tetramesa hordei* on barley in, **559, 605**; *Hylemya* spp. on swede in, **217**; beneficial insects in, **217, 600**
Prionoplus reticularis, bionomics and adult habits of, in timber in New Zealand, **45**; vertebrate predators of, **45**
Pristiphora abietina (on spruce in Germany), attraction of, to terminal buds, **463**; fluctuations in populations of, **335**; parasites of, **336, 429**
Pristiphora erichsonii, on larch in Canada, **143, 144, 563**; development of life tables for, **563**; mortality factors of cocoons of, **563**; bacteria infecting, **577, 659**; and nematode, **577**; sampling techniques for immature stages of, **144**
Pristomerus orbitalis, parasitising *Rhyacionia buoliana* in Germany, **463**
Pristomerus vulnerator, parasitising *Cydia pomonella* in Rumania, **319**
proboscideus, *Curculio*
Proceras indicus, on sugar-cane in India, **527**
Proceras sacchariphagus, in Java, **276**; in Madagascar, **441, 514**; in Mauritius, **276**; in Réunion, **514**; on sugar-cane, **276, 441, 514**; on *Saccharum spontaneum*, **276**; parasites and hyperparasites of, **276, 277, 514**; measures against, **441, 514**

Proceras venosatus, on sugar-cane in Vietnam, **526**
procerus, Trox
proclia, Aphytis
Prodenia eridania, used in tests of insecticides, **7, 8, 355, 521**
Prodenia litura, in Egypt, **29, 30, 31, 32, 33, 34**; in India, **414, 530**; in Israel, **479**; in E. Pakistan, **623**; in Vietnam, **526**; on castor, **30, 414**; on cotton, **29, 30, 31, 32, 33, 34, 479, 530**; varietal resistance of cotton to, **29, 30**; on jute, **623**; on maize, **30, 31, 526**; other food-plants of, **30, 31, 414**; food-plants in relation to development of, **31, 530**; bionomics of, **31**; habits of, **32**; factors affecting development of, **33, 672**; natural enemies of, **30**; virus disease of, **31**; light-trap catches of, **480**; insecticides against, **34, 414**
Prodenia praefica, on tomato in California, **359**; measures against, **359, 360**
Prolan, mixture of Bulan and (see Dilan)
Prolasioptera berlesiana, attacking *Dacus oleae* in Italy, **329, 420**; relation of, to infection of olives by *Sphaeropsis dalmatica*, **420**
proletella, Aleyrodes
pronuba, Triphaena
pronubana, Cacoecimorpha (*Cacoecia*)
propatulus, Triozastus
Prophanurus (see *Telenomus*)
Propyl Isome, effects of, on metabolism of aldrin, **581**
Propylea japonica, predacious on aphids in Japan, **412**
Propylene Dichloride, soil fumigation with mixture containing, against *Phylloxera vitifoliae*, **263**
Propylene Oxide, as fumigant, against pests and diseases of stored cacao, **116, 117**
Prorops nasuta, parasitising *Stephanoderes hampei* in Ivory Coast, **435**
prosacta, Acrocercops
Prosapia bicincta, on *Digitaria decumbens*, **272**
Prospaltella aurantii (parasitising Coccids), in France, **130**; in U.S.A., **372, 570**
Prospaltella berlesei, parasitic on *Pseudaulacaspis pentagona* in France, **130, 423**; factors affecting populations of, **130, 423**
Prospaltella clypealis, parasitising *Aleurocanthus woglumi*, **125**; established in Mexico from India and Pakistan, **125**
Prospaltella fasciata, parasitic on *Quadraspidiotus perniciosus* in France, **130**
Prospaltella opulenta, parasitising *Aleurocanthus woglumi*, **125**; established in Mexico from India and Pakistan, **125**
Prospaltella perniciosi (parasitising *Quadraspidiotus perniciosus*), in France, **130, 426**; in U.S.S.R., **72**; in Yugoslavia, **129**; effects of sprays on populations of, **72, 426**
Prospaltella smithi, parasitising *Aleurocanthus woglumi*, **125**; established in Mexico from India and Pakistan, **125**
Prostephanus truncatus, infesting maize seed imported into Israel from U.S.A., **125**; hydrogen-cyanide fumigation against, **125**
Proteinase, rôle of, in digestion by *Tineola bisselliella*, **516**
Proterodiplosis radicis gen. et sp. n., on *Metrosideros robusta* in New Zealand, **703**
proteus, Omophlus
Protoparce quinquemaculata, on tomato in U.S.A., **239, 359**; measures against, **239, 359**
Protoparce sexta (in U.S.A.), on tobacco, **239**; on tomato, **359**; food-plant selection by, **303**; measures against, **239, 359, 360**
Protozoa, infecting insects, **295, 332, 407, 659**; review of factors affecting use of, against insects, **177**; activation of polyhedrosis virus by, **407**
proximus, Pantorhytes
pruinosa, Sericesthis
Prune, *Panonychus ulmi* on, in British Columbia, **450**
pruni, Eotetranychus; *Hyalopterus*; *Psylla*; *Thecla*
pruniella, Argyresthia (see *A. ephippella*)
prunifoliae, Coleophora
Prunus, Aculus fockeui causing leaf-spot of, in Austria, **67**; species of, as winter food-plants of *Myzus* spp., **324, 397**
Prunus cerasifera, Aculus fockeui causing leaf-spot of, in Austria, **67**
Prunus mahaleb, Rhagoletis cerasi on, in Yugoslavia, **193**
Prunus padus, as primary food-plant of *Rhopalosiphum padi*, **515**
Prunus serotina, Kolotermes approximatus infesting, in Florida, **21**
Prunus virginiana, Contarinia virginianiae on, in Quebec, **448**
Psammotettix striatus, on wheat in U.S.S.R., **256**; transovarian transmission of mosaic virus by, **256**
Psara stultalis, on amarantaceous weeds, **270**; misidentified as *Marasmia venilialis*, **270**
Pseudaletia separata, on maize in Vietnam, **526**; effects of larval crowding on, **672**
Pseudaletia unipuncta, on Guatemala grass in Ceylon, **126**; on bluegrass in

Kentucky, **163**; in Hawaii, **407**; transmission of viruses by, **403**; effects of temperature on larval mortality of, **401**; bacteria and, **401, 402**; Protozoa infecting, **407**; insecticides against, **163**
Pseudaonidia clavigera, in Hawaii and continental U.S.A., **126, 272**
Pseudaulacaspis pentagona, parasites of, on fruit trees in France, **130, 423, 552**; factors regulating populations of, **130**; insecticides against, **423, 552**
Pseudexentera mali, bionomics of, on apple in Quebec, **448**
Pseudhomalopoda prima, parasitising *Chrysomphalus ficus*, **372**; established in Texas, **372**
pseudobrassicae, *Rhopalosiphum*
pseudococci, *Anagyrus*
Pseudococcus, undescribed species of, on strawberry in Yugoslavia, **297**
Pseudococcus adonidum, cacao virus not transmitted by, **118**
Pseudococcus bakeri (see *P. maritimus*)
Pseudococcus brevipes (see *Dysmicoccus*)
Pseudococcus bukobensis (see *P. hargreavesi*)
Pseudococcus capensis (see *P. obscurus*)
Pseudococcus citri (see *Planococcus*)
Pseudococcus concavocerarii, cacao virus transmitted by, **118**
Pseudococcus comstocki, in California, **487**; on apple in Japan, **227**
Pseudococcus hargreavesi, transmitting swollen-shoot virus of cacao in W. Africa, **116**; ants associated with, **116**; effects of sprays on populations of, **116**
Pseudococcus longispinus latipes (see *P. obscurus*)
Pseudococcus malacearum (see *P. obscurus*)
Pseudococcus maritimus, in California, **150, 486**; on pear, **150**; bionomics of, **150**; sprays against, **150**; synonymy of, **487**; *P. obscurus* misidentified as, **487**
Pseudococcus obscurus, on pear in California, **487**; synonymy of, **487**; misidentified as *P. maritimus*, **487**
pseudoeceticola, *Tetrastichus*
Pseudomonas, in *Pseudaletia unipuncta*, **402**
Pseudomonas aeruginosa, *Pseudaletia unipuncta* infected by, **402**
Pseudomonas solanacearum (causing bacterial wilt of banana), in Colombia, **409**; in Costa Rica, **408**; in Honduras, **409**; in Venezuela, **409**; *Heliconia* as natural host of, **408**; transmitted by insects, **409**
pseudoobscura, *Drosophila*
Pseudopachymerus quadrimaculatus (see *Callosobruchus maculatus*)
Pseudoperichaeta roseanae, parasitising *Rhyacionia buoliana* in Yugoslavia, **463**
Pseudophilus testaceus, on date palm in Iraq, **540**
pseudoscoparia, *Sarcophaga* (*Parasarcophaga*)
pseudospretella, *Hofmannophila*
pseudostrobana, *Rhyacionia*
Pseudotsuga menziesii, pests of, in British Columbia, **109, 215, 223, 506, 516, 576, 594, 597, 702**; pests of, in U.S.A., **10, 80, 215, 367, 450, 507, 516, 564, 576, 577**; *Buprestis aurulenta* feeding on, **223**; nature of injury by *Contarinia pseudotsugae* to, **215**; relation of, to production of female attractant by *Dendroctonus*, **450**; infestation patterns of *D. pseudotsugae* in, **10**; *D. pseudotsugae* reared in slabs of, **452**
pseudotsugae, *Contarinia*; *Dendroctonus*; *Dryocoetes* (see *D. autographus*)
psi, *Apatele* (*Acronicta*)
Psila nigricornis, on chrysanthemum in England, **559**; on lettuce, **559**; bionomics of, in glasshouses, **559**; measures against, **559**; characters of immature stages of, **700**
Psila rosae (on carrot), in Britain, **211**; in Canada, **15**; in Germany, **556**; insecticides against, **15, 211, 556**; resistance to chlorinated hydrocarbons in strains of, **15**; characters of immature stages of, **700**
Psilopa leucostoma, on beet in Germany, **623**
Psilosage discendens, parasitising *Periclista albipennis* in Portugal, **464**
Psylla, key to species of, on fruit trees in Poland, **332**
Psylla mali (on apple), in Nova Scotia, **509**; in Poland, **332**; map of distribution of, **212**; fungus infesting, **509**; effects of fungicides on populations of, **509**; survey of data on, **332**
Psylla melanoneura, on spruce and *Crataegus* in Britain, **230**; effects of parasite on migration of, **230**
Psylla pruni, on plum in Poland, **332**; survey of data on, **332**
Psylla pyri (on pear), in Holland, **343**; in Italy, **486**; in Poland, **332**; map of distribution of, **212**; bionomics and natural enemies of, **344**; sprays against, **344**; survey of data on, **332**
Psylla pyricola (on fruit trees), in British Columbia, **510, 596, 666**; in Holland, **343**; in Italy, **486, 677**; in Poland, **332**; in U.S.A., **486, 496**; map of distribution of, **212**; bionomics of, **343, 510**; relation of, to pear decline, **486**; sensitivity of *Pyrus serotina* to

toxin of, **486**; natural enemies of, **344, 510, 666**; other factors influencing populations of, **510**; insecticides against, **344, 496, 596**; resistance to insecticides in strains of, **496**; survey of data, on **332**
Psylla pyrisuga, bionomics of, in Holland, **343**; in Poland, **332**; on conifers, **343**; on peas, **332, 343**; survey of data on, **332**
Psyllaephagus, key to new Australian species of, **609**; parasitising *Cardiaspina albitextura*, **609**
Psyllid, Cacao (see *Mesohomotoma tessmani*)
Psylliodes, species of, in U.S.S.R., **516**
Psylliodes chrysocephalus (on crucifers), in Austria, **66**; bionomics of, in Britain, **210**; in Germany, **334, 557, 701**; fluctations in populations of, **66, 701**; parasite of, **334**; forecasting occurrence of, **557**; traps for, **557**; insecticides against, **66, 211**
psylloides, Gibbium
Pterandrus rosa (see *Ceratitis*)
pteridis, Empoasca
Pteromalus puparum, parasitising *Pieris rapae* in China, **286**; question of supplementary release of, **286**
Pteroptrix dimidiatus, parasitic on *Aulacaspis rosae* in France, **130**
Pterostichus burmeisteri, predacious on *Trypodendron lineatum* in Czechoslovakia, **252**
Pterostichus melanarius (see *Feronia*)
Pterostichus oblongopunctatus, predacious on *Trypodendron lineatum* in Czechoslovakia, **251**
Ptilinus pectinicornis, bionomics of, infesting timber in Europe, **466**
Ptinus fur, in stored wheat in Britain, **379**; not established in New Zealand, **139**
Ptinus tectus, in Austria, **633**; in Britain, **379**; imported into Italy from Norway, **701**; in houses, **633**; in stored foodstuffs, **379, 694, 701**; *Sitophilus granarius* in relation to immature stages of, **694**; mortality factors of, **694**; protection of meat extract against, **232**
Ptycholoma fuscocupreana, on apple in Japan, **227**
Ptychomyia selecta, effects of cold storage on attractiveness of larvae of *Neodiprion lecontei* to, **512**
pubens, Chrysocharis
pubescens, Agonoscelis; *Rhizarcha*
Pueraria hirsuta, Panonychus sp. on, in Virginia, **19**
Puerto Rico, *Anthonomus* on West Indian cherry in, **573**; *Bemisia tabaci* transmitting virus of weed in, **649**; Thysanoptera of, **109**; question of identity of virus disease of bananas, cucurbits and related plants in, **649, 650**
pugnax, Oebalus
pulchellana, Argyrotaenia (*Eulia*)
pulchellus, Cybocephalus; *Ephedrus*
pulcher, Cenopalpus
pulcherrimus, Cirrospilus
pulchra, Icerya
pulicaria, Chaetocnema
pulicarius, Brachypterolus
Pulvinaria innumerabilis, in Ontario, **235**; characters of immature stages of, **235**
Pulvinaria vitis (in Ontario), on peach, **218, 665**; bionomics and ecology of, **665**; feeding habits of, **665**; natural enemies of, **218, 665**; sprays against, **665**; characters of immature stages of, **235**
pulvinatus, Aphidencyrtus (*Encyrtus*)
pumilata, Gymnoscelis
pumilionis, Chlorops (*Oscinis*)
Pumpkin, *Epichorista ionephela* on, in S. Africa, **112**
punctata, Hypera
punctatissimus, Corthylus
punctatum, Anobium
puncticollis, Podagrica
punctigera, Heliothis
punctillum, Stethorus (*Scymnus*)
punctiventris, Cleonus (*Bothynoderes*)
punctulatus, Ephialtes; *Ernobius*
puparum, Pteromalus
purchasi, Icerya
Purshia tridentata, pests of, in Idaho, **580**; toxicity of insecticides to, **580**
pusana, Pyrilla perpusilla
pusilla, Fenusa; *Liriomyza*
pusillus, Cryptolestes; *Hypothenemus*
pustulata, Mylabris
putrescentiae, Tyrophagus
putrida, Drosophila
pygmaea, Heteropeza; *Plagiolepis*
pygmaeus, Cephus
Pygmephorus, key to species of, on cereals and grasses in Sweden, **562**; new species of, **562**
pyralis, Sacadodes
Pyrausta nubilalis (see *Ostrinia*)
Pyrazoxon, as plant dip against *Coccus hesperidum*, **293**; and Isolan, **293**
Pyrethrum (as crop), pests of, in Kenya, **436, 541**; *Thrips nigropilosus* on, in Tanganyika, **436**; pests of, in warm climates, **238**
Pyrethrum (including extracts), against aphids, **341, 677**; ineffective against *Distantiella theobroma*, **177**; against *Psylla pyricola*, **677**; toxicity of, to Coleoptera, **106, 292, 527, 678**; effects

of sub-lethal doses of, on *Sitophilus oryzae*, **678**; treatment of mushroom beds with, against *Heteropeza pygmaea*, **384**; toxicity of, to Lepidoptera, **414, 677, 678**; against Tetranychids, **677, 678**; tests and uses of, against pests of stored products, **11, 12, 231, 232, 301, 437, 527, 637, 673, 678, 696**; germination rate of groundnuts reduced by, **301**; factors affecting efficiency of, **678**; in aerosols, **637**; in dusts, **301**; in sprays, **231, 341, 673, 677, 678, 696**; with piperonyl butoxide, **11, 231, 232, 259, 301, 437, 637, 673, 677, 678, 696**; with other synergists, **259, 437, 460**
Pyrethrum Marc, tests of toxicity of, to insects, **231**
pyri, Anthonomus (see *A. piri*); *Epitrimerus*; *Eriophyes*; *Psylla*; *Stephanitis*; *Typhlodromus*
pyricola, Psylla
Pyrilla, species of, in India and Ceylon, **123**
Pyrilla aberrans, in Ceylon and India, **123**
Pyrilla perpusilla, in Ceylon, India and Siam, **123**; map of distribution of, **212**; subspecies and varieties of, **123**
Pyrilla perpusilla pusana, **123**
pyrina, Zeuzera
pyrisuga, Psylla
Pyroderces rileyi, on maize in U.S.A., **83, 84**; varietal resistance of maize to, **84**; parasites of, **84**; sprays against, **84**
Pyrolan, susceptibility or resistance to, in strains of *Drosophila melanogaster*, **627**
Pyropteron aerifrons (see *Chamaesphecia*)
Pyrus serotina (as pear rootstock), sensitivity of, to toxin of *Psylla pyricola*, **486**

Q

Quadraspidiotus ostreaeformis, bionomics of, on fruit trees in New Zealand, **181**; natural enemies of, **181**
Quadraspidiotus perniciosus (on fruit trees), in Austria, **458**; in Bulgaria, **417**; in France, **130, 426, 552**; in Italy, **38**; in New Zealand, **446**; in S. Rhodesia, **125**; in U.S.S.R., **72**; in Yugoslavia, **129, 299**; bionomics of, **72**; natural enemies of, **72, 129, 130, 426, 552**; other factors regulating populations of, **130**; toxicity of Sevin to, **458**; other insecticides against, **38, 299, 458, 552**
quadridens, Ceutorhynchus
quadrigemina, Chrysomela (*Chrysolina*)
quadrimaculatus, Pseudopachymerus (see *Callosobruchus maculatus*)
quadrinotata, Jauravia
quadripustulatus, Chilocorus; *Pantorhytes*
Quail, Japanese (see *Coturnix c. japonica*)
Quebec, pests of orchard trees in, **2, 3, 222, 447, 448**; *Contarinia virginianiae* on chokecherry in, **448**; *Erannis tiliaria* on sugar maple in, **404**; *Hylemya antiqua* on onion in, **604, 664**; forest pests in, **2, 220, 283, 284, 508, 595, 596, 603, 659, 662, 663, 666**; birch die-back in, **284**; *Thymelicus lineola* not found in, **568**; wireworms in, **598**; fungi infesting *Choristoneura fumiferana* in, **659**; virus diseases of insects in, **404, 663**; natural enemies of pests in, **2, 3, 4, 448, 508, 568, 596, 597, 659, 663, 667**
Queensland, pests of cabbage in, **390**; virus disease of tomato in, **137**; *Listroderes costirostris obliquus* on vegetables, ornamental plants and weeds in, **311, 312**; cotton pests in, **121, 136**; Coccids on fruit and nut trees in, **399**; *Tetranychus* spp. on strawberry in, **287**; *Phthorimaea operculella* on tobacco in, **137**; *Roeselia lugens* on *Eucalyptus* in, **390**; outbreaks of *Chortoicetes terminifera* in, **313**; other pests in, **443, 610**; beneficial insects in, **311, 312, 390**
Quercus (see Oak)
Quercus borealis (see *Q. rubra*)
Quercus ellipsoidalis, insects associated with *Ceratocystis fagacearum* on, in Wisconsin, **369**
Quercus garryana, Lambdina fiscellaria somniaria on, in British Columbia, **405, 506**
Quercus ilex, Noctuids on, in Spain, **679**
Quercus rubra, Archips xylosteanus on, in Bulgaria, **190**; *Myzocallis walshii* on, in British Columbia, **450**
Quercus robur, Lepidoptera on, in Britain, **464**; *Caliroa annulipes* on, in Yugoslavia, **128**; effects on timber increment of defoliation of, **464**
Quercus suber, pests of, in Portugal, **464, 625**; *Coraebus* spp. on, in Spain, **679, 680**
quinaria, Drosophila; *Pardalaspis*
Quince, *Chloroclystis rectangulata* on, in Bulgaria, **189**
2,3-Quinoxalinedithiol Cyclic Trithiocarbonate (see Quinoxaline-2,3-trithiocarbonate)
Quinoxaline-2,3-diyl-trithiocarbonate (see Quinoxaline-2,3-trithiocarbonate)
Quinoxaline-2,3-trithiocarbonate, against mites, **82, 209, 366**; susceptibility or resistance to, in strains of *Tetranychus telarius*, **50, 691**; toxicity of, to insects, **209, 690**; toxicity of, to mammals,

209; fungicidal action and phytotoxicity of, 209; in sprays, 82, 209; as deposit, 690; determination of residues of, in plants, 703
quinquemaculata, *Protoparce*

R

Rachiplusia nu, on flax in Argentina, 646; predator of, 647; sprays against, 646
radiatae, *Conophthorus*
radicis, *Hylobius*; *Proterodiplosis*
Radioactive Isotopes, effects on insects of γ-radiation from, 50, 142, 158, 263, 329, 337, 469, 483, 484, 485, 491, 522, 525, 592, 692; question of irradiation of stored cereals with, 525; influence of γ-radiation from, on virulence of entomogenous fungi, 522; bibliography and symposium on use of, in entomology, 389, 524; as tracers (see next entry)
Radioactive-tracer Methods, in locating nests of *Camponotus*, 348; in studying feeding habits of Cicadellids, 653; in studying movements of Eriophyid, 342; for labelling insects, 146, 523, 524, 525; in study of diffusion of oil films on insects, 212, 213; in investigations on insecticides, 109, 116, 148, 182, 357, 400, 467, 520, 524, 615, 617, 696; bibliography of, 389
Radish, *Lygus lineolaris* on, in New York, 487; *Hylemya brassicae* on, in Norway, 345 (See also *Raphanus*)
Radolin, containing mercury and BHC (*q.v.*), 394
Rainfall, in relation to insects, 60, 67, 104, 131, 145, 257, 287, 312, 375, 387, 410, 430, 434, 510, 591, 656, 684; effects of: on effectiveness of *Bacillus thuringiensis*, 95, 660; on light-trap catches, 472; on insecticides, 52, 139, 178, 329, 441, 467, 484, 575, 578
Raisins, in diet for *Coeloides brunneri*, 507
Raoiella indica, on areca nut in India, 235; new predator of, 235
rapae, *Diaeretus* (*Aphidius*); *Pieris*
Rapala varuna, on guava in India, 44
Rape, *Psylliodes chrysocephalus* on, in Austria, 66; *P. chrysocephalus* on, in Britain, 210, 211; pests of, in Denmark, 636; Coleoptera on, in France, 682; pests of, in Germany, 132, 334, 335, 557, 626, 687, 701; aphids on, in Japan, 412; aphids on, in New Zealand, 180, 181, 445; survey of data on Coleoptera infesting, in Europe, 682; seed treatment of, 66
Raphanus raphanistrum, Tortricids on, in S. Africa, 112
Raspberry, *Apatele rumicis* on, in Bulgaria, 189; *Aulacaspis rosae* on, in France, 130; pests of, in U.S.A., 19, 20, 22; varietal susceptibility of, to aphids, 459; aphids transmitting virus diseases of, 459
Rats, determination of 1,1-dichloro-2,2-bis(p-ethylphenyl)ethane in fat of, 44
rava, *Metarbela*
rectangulata, *Chloroclystis*
recticollis, *Dereodus*
rectus, *Curculio*
Recurvaria leucatella, bionomics and parasites of, on fruit trees in Bulgaria, 555
Recurvaria nanella, bionomics and parasites of, on fruit trees in Bulgaria, 555
Recurvaria piceaella (see *Eucordylea*)
redelei, *Phloeomyzus*
reniculella, *Dioryctria*
repanda, *Mocis*
resinella, *Rhyacionia* (*Evetria*)
resinosae, *Cydia* (*Laspeyresia*)
Resins, infestation of pine in relation to flow of, 661; impregnation of, with dichlorvos, 503
reticularis, *Prionoplus*
Reticulitermes clypeatus, tests of resistance of timbers to, 100
Reticulitermes flavipes, attractants for, in fungus-infested timber, 494; question of repellent against, in teak, 110; fungus infesting, 406
Reticulitermes lucifugus, infesting building timber in France, 206; tests of resistance of timbers to, 100; toxicity of insecticides to, 251
Reticulitermes santonensis, infesting building timber in France, 206
Reticulitermes virginicus, fungus infesting, 406
Réunion, sugar-cane pests in, 640
Reviews: Balachowsky (A. S.), Ed., Entomologie appliquée à l'agriculture (vol. 2), 398; Bonnemaison (L.), Les ennemis animaux des plantes cultivées et des forêts (vol. I–III), 422; Borkhsenius (N. S.), Prakticheskiĭ opredelitel' koktsid (Coccoidea) kul'turnŷkh rasteniĭ i lesnŷkh porod SSSR, 643; Buyckx (E. J. A.), Ed., Précis des maladies et des insectes nuisibles rencontrés sur les plantes cultivées au Congo, au Rwanda et au Burundi, 435; Canova (A.) et al., Hazards of garden crops, 104; Carter (W.), Insects in relation to plant disease, 276; Chararas (C.), Etude biologique des scolytides des conifères, 131; Cotton (R. T.), Pests of stored grain and grain

products (rev. edn.), **173**; Dethier (V. G.), The physiology of insect senses, **553**; Duckham (A. N.) Ed., Farming, **212**; Duffy (E. A. J.), A. monograph of the immature stages of Australasian timber beetles (Cerambycidae), **444**; Goodey (T.), Soil and freshwater nematodes (2nd edn., rewritten by J. B. Goodey), **238**; Graham (K.), Concepts of forest entomology, **346**; Guagliumi (P.), Las plagas de la caña de azúcar en Venezuela, **284**; Gunther (F. A.), Ed., Residue reviews, **240**; Hickin (N. E.), The insect factor in wood decay, **173**; Hickin (N. E.), The woodworm problem, **643**; Kalashnikov (K. Ya.), Pests and diseases of maize, **317**; Khomyakova (V. O.), The corn borer, **40**; Little (V. A.), General and applied entomology (2nd edn.), **357**; Mamaev (B. M.), Gall-midges, their biology and economic importance, **458**; Maramorosch (K.), Ed., Biological transmission of disease agents, **275**; Martin (H.), Ed., Insecticide and fungicide handbook for crop protection . . ., **695**; Metcalf (C. L.) & Flint (W. P.), Destructive and useful insects . . . (4th edn., revd.), **178**; Metcalf (R. L.), Ed., Advances in pest control research (vol. V), **240**; Monro (H. A. U.), Manual of fumigation for insect control, **346**; Orientierung der Tiere, **552**; Paliĭ (V. F.), Rasprostranenie, ékologiya i biologiya zemlyanŷkh bloshek faunŷ SSSR, **515**; Patton (R. L.), Introductory insect physiology, **699**; Raghavan (D.), Ed., Handbook of agriculture, **349**; Rivnay (E.), Field crop pests in the Near East, **237**; Rose (G. J.), Crop protection (2nd edn.), **339**; Schrader (G.), Die Entwicklungen neuer insektizider Phosphorsäure-Ester (3rd edn.), **545**; Schwerdtfeger (F.), Ökologie der Tiere . . . Band I. Autökologie . . ., **700**; Short (J. R. T.), Introduction to applied entomology, **591**; Smith (R. F.) & Mittler (T. E.), Ed., Annual review of entomology (vol. 8), **177, 178**; Steinhaus (E. A.), Ed., Insect pathology . . . (vol. 1), **294**; Thompson (G. H.), Forest Coleoptera of Ghana . . ., **346**; Tzanakakis (M. E.), Methods of insect control, **238**; von Kéler (S.), Entomologisches Wörterbuch . . ., **462**; Wilson (F.), Australia as a source of beneficial insects for biological control, **444**; Wyniger (R.), Pests of crops in warm climates and their control, **238**; Termites in the humid tropics . . ., **398**

Rhabdophaga marginemtorquens, on willows in Britain, **701**

Rhaconotus niger, parasitising *Maliarpha separatella* in Madagascar, **442**

rhadamanthus, *Platymeris*

Rhadinaphelenchus cocophilus, relation of *Rhynchophorus palmarum* to, causing red-ring disease of coconut in Trinidad, **212, 499**

rhagoleticolus, *Opius*

Rhagoletis, survey of data on natural enemies of species of, **516**

Rhagoletis cerasi (on cherry), in Bulgaria, **187**; in Germany, **132, 133, 300, 682**; in Italy, **36, 37, 38, 196, 208, 289**; in Poland, **185**; bionomics and parasites of, in Yugoslavia, **193**; other food-plants of, **193**; insecticides against, **37, 38, 46, 132, 185, 187, 196, 208, 289, 300, 682**

Rhagoletis cingulata, map of distribution of, **389**

Rhagoletis fausta, map of distribution of, **389**

Rhagoletis pomonella (on apple), in Canada, **3, 84, 89, 168, 360, 564**; in Vermont, **655**; effects of temperature on overwintering pupae of, **564**; natural enemies of, **3**; bait for, **360**; insecticides against, **3, 84, 89, 90, 168, 360, 655, 656**

Rhammatocerus pictus, aggregation habits of, on pastures in Argentina, **647**

rhamni, *Zygina*

Rhamnus cathartica, as primary food-plant of aphids in Germany, **395**

Rhamnus dahurica, as primary food-plant of *Aphis glycines* in China, **286**

Rhamnus frangula, as primary food-plant of aphids in Germany, **395**

Rhamnus frangula columnaris, *Popillia japonica* on, in Ohio, **575**

rhediella, *Pammene*

rhenanus, *Typhlodromus*

Rhexia, *Heliothis virescens* on species of, in N. Carolina, **358**

Rhinocoris carmelita, development and predatory habits of, **172**

Rhizarcha pubescens, parasitising *Phytomyza rufipes* in England, **558**; parasite of, **558**

Rhizobius lophanthae (see *Lindorus*)

Rhizoecus falcifer (*moruliferus*), on coffee in Dutch Guiana, **230**; synonymy of, **230**

Rhizoglyphus echinopus, as secondary pest of bulbs in Japan, **617**; acaricides against, **617**

rhizophagus, *Hylobius*; *Leptopius* (*Leptops*)

rhizotrogoides, *Hoplochelus*

Rhizotrogus, species of, in Yugoslavia, **325**

Rhizotrogus aestivus, parasite of, in France, **195**; flight habits of, in Yugoslavia, **325**
Rhode Island, *Lema trilineata* on potato in, **571**
Rhodesia, Northern, pests of maize in, **126**; *Nomadacris septemfasciata* in, **229**
Rhodesia, Southern, *Citrus* pests in, **125, 667**; pests of other fruits in, **120, 230, 667**; *Diparopsis castanea* on cotton in, **228**; cereal pests in, **125, 126**; pests of lawn grasses in, **125, 126**; *Aphelinus mali* introduced into, **120**
Rhodites (see *Diplolepis*)
Rhododendron (Azalea), pests of, in U.S.A., **76, 272**
Rhopalomyzus (see *Myzus*)
Rhopalosiphoninus latysiphon, on endive in Austria, **67**; in beet clamps in Britain, **62**; methyl-bromide fumigation against, **62**
Rhopalosiphoninus staphyleae, in beet clamps in Britain, **62**; methyl-bromide fumigation against, **62**
Rhopalosiphum abietinum, on spruce in Germany, **242, 243**; effects of temperature on infestation by, **243**; anholocyclic overwintering of, **243**
Rhopalosiphum erysimi, on swede in Denmark, **344**; *R. pseudobrassicae* considered as synonym of, **344**
Rhopalosiphum fitchii, auct. (see *R. padi*)
Rh palosiphum insertum, on apple in Britain, **63, 341**; heterogonic cycle of, **171**; sprays against, **341**
Rhopalosiphum maidis (see *Aphis*)
Rhopalosiphum oxyacanthae (see *R. insertum*)
Rhopalosiphum padi (on cereals and grasses), in Austria, **67**; in Canada, **605, 660**; in Czechoslovakia, **480**; in Finland, **63, 107**; in Germany, **202, 557**; in Italy, **515**; in New Zealand, **179**; in Sweden, **563**; in Switzerland, **60**; in Washington, **652**; varietal resistance of barley to, **140**; and virus diseases, **60, 63, 179, 350, 351, 563, 573, 574, 652**; seasonal activity of, **179, 605**; anholocyclic development of, **515**; parasite of, **480**; traps for, **179**; killed by low temperatures, **283**; question of application of insecticides against, **605**
Rhopalosiphum poae (see *Myzus*)
Rhopalosiphum pseudobrassicae, in N. Carolina, **344**; considered as race of *R. erysimi*, **344**
Rhopalosiphum rufomaculatum, on chrysanthemum in Egypt, **399**
Rhopobota naevana ilicifoliana, bionomics and parasite of, on holly in U.S.A., **51**; sprays against, **51**
rhosaces, *Tetrastichus*
Rhothane (see DDD)
Rhyacia c-nigrum (see *Amathes*)
Rhyacia saucia (see *Peridroma*)
Rhyacionia buoliana (on pines), in Argentina, **645**; in Canada, **145, 146, 147, 213**; in Germany, **463**; in Spain, **678**; in U.S.A., **147, 166, 452, 506**; in Yugoslavia, **193, 327, 463**; bionomics of, **193, 645**; influence of food-plant on development of, **506**; factors affecting populations of, **145, 146, 147, 452**; labelled with ^{60}Co, **146**; susceptibility of, to *Bacillus thuringiensis*, **406**; infection of, by nematode and associated bacterium, **577**; parasites of, **166, 213, 463, 506, 645, 646**; influence of haemolymph of, on parasite fecundity, **568**; measures against, **327, 646**; characters distinguishing *R. pinicolana* from, **678**
Rhyacionia pinicolana, on pines in Spain, **678**; characters of, **678**
Rhyacionia pseudostrobana sp. n., on pine in Guatemala, **431**
Rhyacionia resinella (on pines), length of generation of, in Sweden, **41**; in Yugoslavia, **194**
Rhyacionia turionana, on pine in Yugoslavia, **194**
Rhynchites germanicus, feeding in relation to population dynamics of, **400**
Rhynchophorus palmarum, relation of, to nematode causing red-ring disease of coconut in Trinidad, **212, 499**; insecticides against, **500**
Rhynchosia memnonia, as source of broad-bean virus in Sudan, **650**
Rhynchosia minima, *Bemisia tabaci* transmitting mosaic virus of, in Puerto Rico, **649**
Rhyparochromus littoralis, on sesame in Sudan, **433**
Rhyzopertha, in pit-stored sorghum in Sudan, **29**
Rhyzopertha dominica (in stored cereals), in India, **622**; in Sweden, **561**; in Texas, **11**; relation of grain structure to oviposition by, **120**; airing and cleaning stored cereals in relation to infestation by, **273, 561**; effects of electrical treatment of stored wheat on, **240**; tests and uses of insecticides against, **11, 12, 161, 499, 527**
ribeana, *Pandemis*
ribesii, *Syrphus*
ribis, *Bryobia*; *Cecidophyopsis* (*Phytoptus*)
Rice, *Laodelphax striatella* on, in China, **391**; *Susumia exigua* on, in Fiji, **270**; pests of, in India, **49, 203, 571**; pests of, in Japan, **47, 48, 226, 315, 413, 616**; pests of, in Madagascar, **441, 442**;

moth-borers on, in Pakistan, **277, 278**; new Typhlocybid on, in Siam, **42**; pests of, in U.S.A., **78, 83, 152, 153, 364**; pests of, in Vietnam, **526**; study on transmission of virus disease of, by *Chloriona orizicola*, **95**; determination of resistance in varieties of, to hoja blanca disease, **96**; factors affecting susceptibility of, to *Chilo suppressalis*, **48, 315**; effects of infestation by *Oebalus pugnax* on yield and quality of, **153**; systemic activity of BHC in, **617**; metabolism of phosphorus compounds in, **617**; duration of insecticide deposits on, **616**

Rice (Stored), Coleoptera in, **253, 273, 530, 620**; relation of structure of grain of, to oviposition by *Rhyzopertha dominica*, **120**; cleaning in relation to reinfestation of, **273**; sorption of methyl bromide by, **85**

Rice Bran, insects infesting, **304, 316, 399**; *Cadra cautella* reared on, **614**; treatment of, with malathion, **304, 399**

richteri, Solenopsis saevissima

Ricinus communis, question of use of, as trap crop for *Prodenia litura* in Egypt, **30**; *P. litura* on, in India, **414**; development of *P. litura* on, **530**

Rickettsiae, pathogenicity of, to vectors, **295**; survey of data on, **295**

Rickettsiella melolonthae, infecting larvae of *Melolontha melolontha*, **205**

riegeli, Phytoseiulus (see *P. persimilis*)

rileyi, Pyroderces

Risella 17, **212**

ritchiei, Achrysocharella

Robinia pseudacacia, Eulecanium corni on, in Yugoslavia, **54**

robusta, Drosophila; *Perniphora*

robustus, Aeroglyphus; *Leptopius* (*Leptops*)

roddi, Eurytoma (*Bruchophagus*)

Rodents, effects on *Tribolium confusum* of anticoagulants in baits for, **21**

Rodolia cardinalis (attacking *Icerya purchasi*), introduced into France, **58**; in Sicily, **198**

Roeselia lugens, bionomics and natural enemies of, on *Eucalyptus* in Queensland, **389**

Rogadinus, parasite of *Leucoptera coma* in Congo cited as species of, **668**

rogatalis, Hellula

Rogor (see Dimethoate)

Ronnel (see Fenchlorphos)

Röntgen Rays (see X-rays)

Rosa, Macrosiphum dirhodum overwintering on species of, in British Columbia, **605** (See also Rose)

rosa, Ceratitis (*Pterandrus*)

rosae, Athalia; *Aulacaspis*; *Diplolepis* (*Rhodites*); *Eurytoma*; *Macrosiphum* (*Aphis*); *Psila*; *Typhlocyba* (*Edwardsiana*)

rosaphidis, Aphidius

Rose, *Perotis lugubris* on, in Bulgaria, **418**; *Macrosiphum rosae* on, in France, **298**; pests of, in Italy, **544, 677**; *Trichocerota constricta* on, in Japan, **348**; *Tetranychus telarius* on, in Norway, **691**; pests of, in U.S.A., **352, 491**; tests of polybutenes on, **210** (See also *Rosa*)

roseanae, Pseudoperichaeta (*Zenillia*)

roseus, Anuraphis (see *A. plantaginea*); *Eyprepocnemis*

rostrana, Platynota

rostrata, Aelia

Rotenone, against *Aleurocanthus woglumi*, **125**; toxicity of, to *Harpalus rufipes*, **380**; in sprays against *Tetranychus telarius*, **320**; analysis of insecticides containing, **171**; and oil emulsions, **125**

Rothane (see DDD)

rotundata, Megachile (*Eutricharaea*)

rotundiceps, Eubadizon

rougeoti, Eumeta

RP-10,465 (see O,O-Dimethyl S-2-(1-Methylcarbamoylethylthio)ethyl Phosphorothioate)

R.S.M. Sprayer, **501**

Ruanda-Urundi (see Rwanda and Burundi)

Rubber, book on pests of, **238**; use of apparatus constructed from, in toxicity tests, **683** (See also *Hevea*)

rubi, Amphorophora; *Lasioptera*

rubidum, Sphaeroderma

rubrescens, Heliothis

rubricatus, Lygus

rubrioculus, Bryobia

rubripes, Apanteles

rubroanalis, Phytodecta fornicata

rubrocinctus, Selenothrips (*Heliothrips*)

Rubus, Pennisetia marginata on cultivated species of, in N. America, **595**

ruderatus, Bombus

Ruebsaamenia keeni, on Douglas fir in Idaho, **577**

Ruelene (see O-Methyl O-4-tert.-Butyl-2-chlorophenyl Methylphosphoramidate)

rufa, Formica

rufifemur, Campoplex (*Eulimneria*)

rufinus, Stenichneumon

rufipes, Harpalus; *Necrobia*; *Phytomyza*

rufomaculata, Batocera

rufomaculatum, Rhopalosiphum (*Coloradoa*)

rufovillosum, Xestobium

rufulum, Eulecanium (*Parthenolecanium*)

rufus, Aptinothrips

rugulipennis, Lygus
Rumania, pests of cereals, fruits and vegetables in, **314, 317, 318, 319, 320**; survey of pests of cultivated plants in, **235**; *Beauveria bassiana* infesting *Cydia pomonella* in, **319**; beneficial insects in, **318, 319**
Rumex, Celerio lineata livornica feeding on, in Yugoslavia, **194**
Rumex acetosella, Tortricids on, in S. Africa, **112**
Rumex obtusifolius, Hydroecia micacea on, in Germany, **280**
rumicis, Apatele (*Acronicta*)
Rungsia kurdjumovi, on cereals and grasses in Manitoba, **660**
ruskini, Xenufens
rustica, Cantharis; *Dexia* (*Dexilla*); *Tachina*
rusticus, Anisodactylus
Rutabaga (see Swede)
rutilla, auct., *Eucarcelia* (see *Carcelia obesa*)
Rwanda, *Antestiopsis lineaticollis ghesquierei* on coffee in, **53**; survey of data on diseases and pests of crop plants in, **435**; distribution of forest pests in, **120**
Ryania, in spray mixtures against apple pests, **227, 340**; effects of, on beneficial insects, **104, 690**
Rye, *Rhopalosiphum padi* on, in Austria, **67**; *Tetranychus* sp. on, in Manitoba, **2**; flowering of, in relation to emergence of *Athalia rosae*, **201**; seeds of, used in food-selection tests with wireworms, **536**; (stored), Coleoptera in, **252, 561**; effects on pests of air-cooling of, **561**

S

S 31 (see O,O-Dimethyl S-Methylcarbamoylmethyl Phosphorothioate)
Sabatiella, parasitising *Nacoleia octasema* in New Guinea and New Britain, **671**
sabella, Arenipses
sabulifera, Anomis
Sacadodes pyralis, mating habits and fecundity of, **607**
saccharalis, Diatraea
sacchari, Aphis (*Longiunguis*); *Saccharicoccus*
saccharicida, Perkinsiella
Saccharicoccus sacchari, on sugar-cane in Madagascar, **441, 514**; endrin ineffective against, **441**
saccharina, Aeneolamia varia
sacchariphagus, Proceras
Saccharum spontaneum, Proceras sacchariphagus on, in Java, **276**
Sacciphantes (see *Chermes*)
Sacks, tests of liners for, in fumigation of stored cacao pods, **116**; treatments of, against pests of stored products, **304, 398, 481, 696**
saevissima, Solenopsis
Safflower (see *Carthamus tinctorius*)
Safroxan, as synergist with pyrethrins, **436**
Sahlbergella, insecticides against, on cacao in Ivory Coast, **440**
Sahlbergella singularis (on cacao), in W. Africa, **114, 115, 116, 117, 440, 462**; relation of, to cacao diseases, **114, 115, 118**; measures against, **115, 117, 440**
Sainfoin (see *Onobrychis viciifolia*)
St. Kitts, *Elasmopalpus lignosellus* on sugar-cane in, **648**
Saissetia oleae, in Florida, **99**; in Italy, **208, 329, 330**; in Morocco, **104**; on *Citrus*, **99, 208**; on olive, **104, 329, 330**; on other plants, **104**; method of rearing, **104**; measures against, **99, 208, 330**; favoured by organophosphates, **330**
Saitofos, in sprays against *Eumegastigmus pistaciae*, **198**; composition of, **198**
sajoi, Tetrastichus
Salebria semirubella, on lucerne in Bulgaria, **188, 476**; insecticides against, **477**
Salitol, ineffective against cotton pests, **34**; composition of, **34**
Salix (see Willow)
Salix americana, Cryptorhynchus lapathi on, in France, **245**; *C. lapathi* on, in Hungary, **336**; *Caliroa annulipes* on, in Yugoslavia, **128**
Salix daphnoides acutifolia, Cossus cossus infesting, in U.S.S.R., **73**
Salmalia malabarica, Lyctus africanus in sapwood veneer of, **622**
Salsola kali tenuifolia, as food-plant of *Melanoplus bilituratus*, **511**
saltatrix, Meromyza
Saltpetre, in soil treatments with insecticides, **475**
Sambucus nigra, Aphis fabae on, in Bulgaria, **324**
Samoa, Cerambycids infesting timber in, **444**; *Nacoleia octasema* in, **670**
Samoa, American, *Othreis fullonia* feeding on tomato fruits in, **661**
sanborni, Macrosiphum (*Macrosiphoniella*)
sanctaecrucis, Anadaptus
sanctaehelenae, Heteronychus (see *H. arator*)
Sanninoidea exitiosa (see *Aegeria*)
Sansevieria laurentii, Pinnaspis aspidistrae on, in Italy, **234**
santonensis, Reticulitermes

Saperda carcharias (on deciduous trees), bionomics of, in Czechoslovakia, **250**; in France, **206**
Saperda populnea (on poplar), in France, **206**; bionomics of, in Yugoslavia, **235**
Sappaphis (see *Anuraphis*)
saratogensis, Aphrophora
Sarcodexia sternodontis (see *Sarcophaga lambens*)
Sarcophaga caridei, question of, destroying *Schistocerca pallens* in Venezuela, **296**
Sarcophaga lambens, parasitising *Caligo memnon* in Costa Rica, **488, 492**; destroying *Schistocerca pallens* in Venezuela, **296**
Sarcophaga peregrina, carbon dioxide as anaesthetic for, **236**
Sarcophaga pseudoscoparia, destroying *Dendrolimus superans* in U.S.S.R., **75**
Sarcophaga uliginosa, destroying *Dendrolimus superans* in U.S.S.R., **75**
sasakii, Carposina; *Sitophilus* (see *S. oryzae*)
Saskatchewan, pests of cereals and grasses in, **262, 604**; virus disease of wheat in, **651**; *Macrosiphum caraganae* on *Caragana* in, **567**; *Adelphocoris lineolatus* on leguminous forage plants in, **598, 599**; *Hylemya floralis* on swedes in, **281**; forest pests in, **143, 144, 216, 507, 594, 601**; ecology of *Melanoplus bilituratus* in, **511**; wireworms in, **262, 282**; pests of stored grain in, **218, 221**; natural enemies of pests in, **507, 599, 602**
Satellites, Artificial, device for recording activity of insect in, **265**
satellitium, Scopelosoma (see *Eupsilia transversa*)
saucia, Peridroma (*Rhyacia*)
Saudi Arabia (see Arabia)
saulius, Pediobius
saussurei, Phanerotoma
sayi, Carpophilus; *Chlorochroa*
Scabiosa arvensis (see *Knautia*)
scabricollis, Pissodes
Scale, California Red (see *Aonidiella aurantii*)
Scale, Californian (see *Quadraspidiotus perniciosus*)
Scale Insects, review of, on tea in India, **530**; work on, as pests of crop plants in Turkey, **50**; survey of data on, infesting crops and trees in U.S.S.R., **643**; ants associated with, **78, 115, 201, 292, 419, 420, 524, 635**; natural enemies of, **30, 70, 72, 78, 124, 125, 129, 130, 135, 136, 181, 182, 198, 218, 225, 226, 230, 272, 292, 328, 353, 372, 419, 420, 423, 426, 444, 507, 545, 552, 569, 570, 620, 630, 665**; review of Coccinellids in relation to biological control of, **58**; fungi infesting, **570, 620**; study on food-plant range of, **54**; relation of, to plant diseases, **115, 118, 276**, factors affecting populations of, **22, 182**; nomenclature and synonymy of, **230, 486**; method of rearing, **104**
Scambus (see *Ephialtes*)
Scaphoideus littoralis, on vines in France, **548, 636**; bionomics of, **548**; transmitting virus diseases, **548, 636**
Scaptocoris castaneus, on groundnut in Brazil, **446**
schach, Deois
schimitscheki, Megastigmus
schistaceana, Argyroploce
Schistocerca cancellata, distribution of, in Argentina, **297**
Schistocerca gregaria, in Aden, **228**; in E. Africa, **175, 176, 410**; in Arabia, **176**; in India, **529, 531, 621, 640**; flight activity of, **176, 640**; relation of climatic factors to movements of, **175, 410, 529**; ecology of habitat of, **176**; types of soil in relation to oviposition by, **531**; rôle of irrigation in relation to solitary breeding by, **228**; neurosecretory control of ovarian development in, **237**; predators of, **621**; report on organisation of control of, **175**
Schistocerca impleta, bionomics of, in Venezuela, **296**
Schistocerca pallens (in Venezuela), **639**; bionomics and natural enemies of, on sugar-cane and grasses, **296**; insecticides against, **296**
Schizaphis graminum (see *Toxoptera*)
schlechtendali, Aculus (*Vasates*)
schoenobii, Shirakia
Schoenobius incertulas (see *Tryporyza*)
Schradan, against aphids, **14, 366**; ineffective against *Diaphania hyalinata*, **14**; against mites, **320, 341, 342**; comparative toxicity of, to arthropods, **155**; in sprays, **14, 320**; tests of systemic action and other methods of application of, **182, 342, 366**; labelled with ^{32}P, **182**
schuetzeella, Dioryctria
schwerdtfegeri, Apolychrosis
Sciaphobus squalidus, bionomics of, on fruit and nut trees in Yugoslavia, **326**; tests and uses of insecticides against, **327**
Sciapteron tabaniformis (see *Paranthrene*)
Scirpophaga chrysorrhoa, on sugar-cane in Vietnam, **526**; light-trap catches of, **526**
Scirpophaga innotata (see *Tryporyza*)
Scirpophaga nivella (on sugar-cane), in Formosa, **572**; in India, **413**; in Java,

413; in Pakistan, 277; morphology of sugar-cane in relation to resistance to, 572; bionomics of, 277; parasites of, 277, 413
Scirpus tuberosus, *Chilo* sp. on, in Pakistan, 278
scitella, *Leucoptera*
Scleron latipes, on tobacco in India, 675
scoliopi, *Macrosiphum*
Scolothrips longicornis, predacious on Tetranychoid mites in Austria, 65
Scolytoproctus, species of, destroying Platypodids in Ghana, 373, 376
Scolytus, species of, on elms in Poland, 465
Scopelosoma satellitium (see *Eupsilia transversa*)
Scopiorus (see *Polyblastus*)
Scopula emissaria, on jute in E. Pakistan, 623
Scots Pine (see *Pinus sylvestris*)
Screening, prevention of access of *Megaselia halterata* to mushrooms beds by, 42
Scrobipalpa ocellatella, BHC against, on beet in Rumania, 320
scutellaris, *Apanteles*
scutellata, *Alloxysta*; *Sturmia* (*Blepharipoda*)
scutellatus, *Monochamus*
Scutellista cyanea, destroying eggs of *Ceroplastes sinensis* in Sicily, 198
scutigera, *Pectinophora*
Scutigerella immaculata, aspirator for collecting, 367
scutosa, *Heliothis*
Scymnus (predacious on Coccids), in India, 620; in Italy, 198, 419
Scymnus interruptus, predacious on *Prodenia* in Egypt, 30; effects of sprays on, 30
Scymnus punctillum (see *Stethorus*)
Scymnus syriacus, predacious on cotton pests in Egypt, 30; effects of sprays on, 30
SD-1836 (see Diethyl 2-Chlorovinyl Phosphate)
SD-3562 (see Dimethyl 1-Dimethylcarbamoyl-1-propen-2-yl Phosphate)
SD-4402 (see 1,3,4,5,6,7,8,8-Octachloro-3a,4,7,7a - tetrahydro - 4,7 - methanopththalan)
Sectiliclava cleone, in Britain, 230; bionomics of, parasitising *Psylla melanoneura*, 230
securis, *Hylemya* (*Phorbia*)
Sedge, effects of, as food-plant for *Camnula pellucida*, 604
segetum, *Agrotis*; *Anisoplia*
selecta, *Ptychomyia*
Selenothrips rubrocinctus, on cacao in W. Africa, 115; on cashew and other plants in Trinidad, 122; nutritional factors related to population fluctuations in, 122, 123
Selinon, containing DNC (*q.v.*), 103, 187
semiflavus, *Aphelinus*
semifumatum, *Trichogramma*
semigranosus, *Xyleborus* (see *X. semiopacus*)
semiopacus, *Xyleborus*
Semiothisa signaria, on *Abies sibirica* in U.S.S.R., 75
semipunctata, *Phoracantha*
semirostris, *Ips*
semirubella, *Salebria*
semistriatus, *Asolcus* (*Microphanurus*)
semitectus, *Colopterus*
Senecio longilobus, attraction of insects to, in Arizona, 516
Senegal, *Dactylispa nigritula* on millet in, 107
senegalensis, *Oedaleus*
separata, *Pseudaletia* (*Leucania*)
separatella, *Maliarpha*
septemfasciata, *Nomadacris*
septempunctata, *Coccinella*
septendecim, *Magicicada*
sericea, *Blastothrix*; *Trichispa*
sericeicornis, *Sympiesis*
Sericesthis pruinosa, virus disease of, in New South Wales, 702
Sericulture, review of, 177
serinopa, *Nephantis*
serius, *Eretmocerus*
serotina, *Acantholyda pinivora*
serrata, *Fulmekiola*
Serratia marcescens, infecting insects, 402, 635
serricorne, *Lasioderma*
sertatus, *Oxyopes*
sertifer, *Neodiprion*
servus, *Euschistus*
Sesame (see *Sesamum*)
Sesamex, metabolism of aldrin inhibited by, 581; effects of, on soil bacteria, 582
Sesamia, on sorghum in Sudan, 27
Sesamia calamistis, on sugar-cane: in Madagascar, 234, 441, 514; in Réunion, 514; on other graminaceous plants, 514; parasite of, 514; measures against, 234, 441, 514
Sesamia cretica, on sorghum in Sudan, 433; on maize in Yugoslavia, 394; fungus disease and natural enemies of, 394
Sesamia inferens, in Pakistan, 277, 278; in Vietnam, 526; on rice, 278, 526; on sugar-cane, 277, 526; on maize and grasses, 277, 278; parasite of, 277
Sesamia nonagrioides, determination of infestation by, on maize in France, 243,

244; varietal susceptibility of maize to, 243, 244; method of rearing, 244
Sesamol, in relation to metabolism of aldrin, 581
Sesamum orientale, varietal susceptibility of, to *Antigastra catalaunalis* in India, 620; pests of, in Sudan, 433
sesbaniae, *Macrosiphum* (*Acyrthosiphon*)
Sesia chalcidiformis, bionomics of, on sainfoin in Bulgaria, 478; measures against, 478
setariae, *Carolinaia* (*Hysteroneura*)
setifacies, *Lypha*
setosa, *Hoplodictya*
setulosus, *Pharoscymnus*
Sevin, against aphids, 14, 227, 530; against Coccids, 5, 96, 423, 426, 458; against other Hemiptera, 14, 83, 307, 409, 526; resistance to, in strains of *Erythroneura variabilis*, 24; against *Contarinia* spp., 367, 580; effects of, on other Diptera, 152, 360, 627; against Curculionids, 19, 87, 159, 497, 503; against other Coleoptera, 85, 98, 117, 153, 380, 486, 503, 571, 575; against *Fenusa pusilla*, 76; against Noctuids, 81, 85, 87, 118, 163, 165, 263, 359, 365, 482, 627; ineffective against *Rachiplusia nu*, 647; against Pyralids, 14, 16, 82, 442, 526, 655; low toxicity of, to larvae of *Dioryctria abietivorella*, 86; against Tortricids (*sens.lat.*), 90, 111, 266, 304, 340, 458, 527; against other Lepidoptera, 52, 88, 113, 137, 331, 359, 440, 499, 581; diverse effects of, on grasshoppers, 83, 163; against thrips, 12, 13; against mites, 82, 141, 505, 670; Tetranychids favoured by, 82, 340; effects of, on natural enemies of pests, 141, 227, 248, 423, 426, 491, 497, 690; comparative toxicity of, to arthropods, 155; review of mode of action of, 177; metabolism and excretion of, by cattle, 455; in dusts, 24, 263, 359, 409, 486, 670; in granules, 165, 655; in sprays, 5, 12, 13, 14, 19, 24, 52, 76, 81, 82, 83, 85, 86, 88, 90, 96, 98, 111, 113, 118, 137, 153, 163, 165, 227, 248, 266, 304, 307, 331, 340, 359, 360, 365, 367, 423, 426, 440, 442, 458, 482, 484, 486, 491, 497, 499, 505, 512, 526, 527, 571, 575, 579, 581, 627, 647, 670, 690; effects of spray additives on effectiveness of, 52; applied from aircraft, 52, 81, 83, 88, 655; as deposit, 484, 486, 499, 690; factors affecting deposits of, 512, 575; applied in transplanting water, 16; soil treatment with, 409; tests and uses of, against pests of stored products, 12, 503; residues of, in bees, 516; residues of, on plants, 111, 304, 307, 516; rate of loss of residues of, 90; tolerance limits for, 111; toxicity of, to plants, 87, 98; bioassay of, 90; and DDT, 409; and glyodin, 227; and oil emulsion, 458; and tar distillate, 458; and thiram, 426; and Trithion, 24
sexguttatus, *Agrilus* (see *A. ater*)
sexmaculatus, *Eotetranychus*
sexnotatus, *Macrosteles*
sexta, *Protoparce*
sexualis, *Mecedanum*
Sheep, *Cadra cautella* infesting hides of, 396
sheldoni, *Aceria*
Shell Risella 17, 170
Shell SD-3562 (see Dimethyl 1-Dimethylcarbamoyl-1-propen-2-yl Phosphate)
Shell SD-4402 (see 1,3,4,5,6,7,8,8-Octachloro-3a,4,7,7a-tetrahydro-4,7-methanophthalan)
Shell WL-1650 (see 1,3,4,5,6,7,8,8-Octachloro-3a,4,7,7a-tetrahydro-4,7-methanophthalan)
shikhae, *Palorus*
Shirakia schoenobii, attacking Lepidoptera in Pakistan, 278
Shortleaf Pine (see *Pinus echinata*)
Shrimp, Freshwater (see *Gammarus*)
Siam, *Empoasca devastans* on cotton in, 121; new Typhlocybid on rice in, 42; *Pyrilla perpusilla* in, 123
Siberian Fir (see *Abies sibirica*)
Sibine apicalis, bionomics of, on banana and other plants in Costa Rica, 487, 488, 492; parasites of, 488, 492
sibiricus, *Dendrolimus* (see *D. superans*)
Sicily, ants on almond in, 201; *Citrus* pests in, 197, 198, 199, 200, 201; pests of olive in, 195, 200, 201; pests of pistachio in, 198, 201; *Eumegastigmus pistaciae* on *Pistacia terebinthus* in, 198; *Bruchus* spp. infesting lentils in, 199; beneficial insects in, 195, 198, 200
siculus, *Opius* (see *O. concolor*)
Sierra Leone, pests of cacao in, 113, 462; virus disease of cacao in, 118
sierricola, *Acanthopsyche*
signaria, *Semiothisa*
signaticornis, *Bruchus*
signifera, *Maliattha*
silhetana, *Eurema blanda*
Silica, compatibility of, with heptachlor, 299
Silica Aerogel, tests of, against Coleoptera in stored sorghum, 11, 12
Silica Gel, mode of action of, against *Tribolium castaneum*, 232; against mites, 366, 453
Silicon, as factor in resistance of rice varieties to infestation by *Chilo suppressalis*, 48

Silkworm (see *Bombyx mori* and Sericulture)
Silmite, containing dichlorvos (*q.v.*), **453**
similalis, *Loxostege*
similis, *Chermes*; *Coccophagoides*; *Diprion*; *Dysdercus*
simmondsi, *Adalia*
simplex, *Gonocephalum*; *Taeniothrips*; *Trogoderma*
simplex, auct., *Erythroneura* (see *Zygina rhamni*)
simplicicollis, *Erythemis*
simulans, *Drosophila*
Sinapis alba (Mustard), development of *Myzus persicae* on, in England, **302**; pests of, in Germany, **202, 356, 626**; seed treatment of, **60**; parathion residues on, **361**
Sinapis arvensis, as food-plant of *Melanoplus bilituratus*, **511**
Sinea diadema, predacious on *Adelphocoris superbus* in Alberta, **140**; effects of insecticides and spring burning on populations of, **140**
sinensis, *Ceroplastes*
Singhara (see *Trapa bispinosa*)
singularis, *Sahlbergella*
sinhai, *Tetranychus*
Sinigrin, rôle of, in food-plant selection by *Brevicoryne brassicae*, **532**
Sinomegoura citricola, on *Citrus* in Formosa, **612**
Sinoxylon anale, infesting timber in India, **529**; method of rearing, **529**
Sinoxylon crassum, infesting timber in India, **529**; method of rearing, **529**
Sinoxylon perforans, bionomics and adult habits of, on vines and fruit trees in Italy, **543**; natural enemies of, **543**; insecticides against, **543**
Sipha agropyrella (see *Rungsia kurdjumovi*)
siphonophorae, *Pachyneuron*
Sirex noctilio, infesting pines in New Zealand, **444, 466**; transmitting fungus disease, **466**; use of *Ibalia leucospoides* against, **444**
siro, *Acarus*
Sisyropa, parasitising *Nacoleia octasema* in Bougainville, **671**
sitchensis, *Pissodes*
Siteroptes, species of, on cereals and grasses in Sweden, **562**
Sitka Spruce (see *Picea sitchensis*)
Sitodiplosis mosellana, on wheat in Austria, **296**; varietal susceptibility of wheat to, **296**; natural enemies of, **296**
Sitona, on peas and vetches in Czechoslovakia, **69**; parasite of, **516**; insecticides against, **69**
Sitona crinitus, insecticides against, on peas and vetches in Czechoslovakia, **69**
Sitona decipiens, factors affecting oviposition by, on red clover in Finland, **470**; characters of egg of, **470**
Sitona flavescens (on clover), factors affecting oviposition by, in Finland, **470**; in New Hampshire, **351**; characters of egg of, **470**
Sitona hispidulus, in Finland, **470**; in U.S.A., **156, 157, 351, 498**; on clovers, **351, 470, 498**; on lucerne, **156, 157**; evaluation of damage caused by, **156**; flight habits of, **498**; factors affecting oviposition by, **470**; injurious and entomogenous fungi isolated from, **351**; trap for, **498**; insecticides against, **156, 157**
Sitona lineatus (on leguminous forage plants), in Czechoslovakia, **69**; in Finland, **470**; factors affecting oviposition by, **470**; insecticides against, **69**
Sitona sulcifrons, on red clover in Finland, **470**; factors affecting oviposition by, **470**
Sitona suturalis, oviposition habits of, **470**
Sitophilus, cleaning of stored cereals in relation to reinfestation by, **273**
Sitophilus granarius (in stored cereals), in Britain, **379**; in Czechoslovakia, **466**; in Egypt, **503**; factors affecting development and adult activity of, **252, 253, 382**; in relation to immature stages of *Ptinus tectus*, **694**; random sampling of cultures of, **381**; tests of Fluon barrier against, **100**; effects of electrical treatments on, **52, 240, 525**; tests and uses of insecticides against, **161, 292, 424, 437, 499, 501, 503**; metabolism and excretion of hydrogen cyanide in, **109**
Sitophilus oryzae (L.) (in stored cereals), in India, **622**; in Sweden, **561**; in U.S.A., **11, 13, 594**; characters of sorghum seeds in relation to infestation by, **452**; effects of foods on mortality, fecundity and development of, **252, 253**; mycetomal micro-organisms of, **594**; parasite of, **634**; tests and uses of insecticides against, **11, 12, 85, 346, 437, 499, 527, 678**; factors affecting susceptibility of, to insecticides, **13**; absorption and metabolism of Ruelene by, **148**; other measures against, **161, 240, 382, 561**; characters distinguishing *S. zeamais* from, **449, 594**
Sitophilus oryzae, auct. (see *S. zeamais*)
Sitophilus sasakii (see *S. oryzae*)
Sitophilus zeamais, in U.S.A., **99, 594**; in stored cereals, **99**; question of occurrence of, on field maize, **99**;

mycetomal micro-organisms of, **594**; characters distinguishing *S. oryzae* from, **449, 594**
Sitosterol, in diet for *Anthonomus grandis*, **498**
Sitotroga cerealella, in Indiana, **99**; in Nigeria, **378**; in stored cereals, **99, 378**; on field maize, **99**; effects of nitrofurans on, **501**; characters of, **378**
Skins, *Dermestes maculatus* infesting, **674**
Slash Pine (see *Pinus elliottii*)
slossonae, Helioplagia
smithi, Aphidius; *Prospaltella*
Smithiavirus pityocampae, **550**
smithii, Amathes (*Graphiphora*)
Snails, *Hoplodictya* spp. predacious on, in U.S.A., **639**
Snapdragon (see *Antirrhinum majus*)
Snow, effects of, on survival of larvae of *Rhyacionia buoliana*, **147**
Soap, use of, in detection of mites in stored products, **412**; effects of, on activity of DDT suspensions, **697**
socia, Gilpinia
Sodium Alginate, growth of *Anthonomus grandis* inhibited by, **498**; in diet for *Diatraea saccharalis*, **8**
Sodium Arsenite, effects on beetles of treatment of trees with, **69, 375**
Sodium Benzoate, ineffective against *Aspergillus* in artificial diets for *Pectinophora gossypiella*, **150**
Sodium Bromide, residues of, in milk, **455**
Sodium Dihydrogen Phosphate, use of, for labelling mites with ^{32}P, **342**
Sodium Fluoride, toxicity of, to bees, **589**
Sodium Hypochlorite, pathogen of *Panonychus citri* denatured by, **692**
Sodium Nitrite, treatment of stored fish with, **231**
Sogata furcifera (see *Sogatella*)
Sogata kolophon (see *Sogatella*)
Sogata orizicola (see *Sogatodes*)
Sogatella, accorded generic status, **380**
Sogatella (*Chloriona*) *furcifera*, bionomics of, on rice and grasses in Japan, **315**; on sugar-cane in Vietnam, **526**; food-plant preferences of, **315**; light-trap catches of, **526**; sprays against, **526**; revision of complex of, **380**
Sogatella kolophon, **380**
Sogatodes gen. n., **380**
Sogatodes cubanus, **380**
Sogatodes (*Chloriona*) *orizicola*, **380**; question of occurrence of, in U.S.A., **152**; food-plant range of, **152**; transmission of virus disease of rice by, **95**
Soil, oviposition by *Agrotis ipsilon* on, **593**; effects of moisture in, on pupation and emergence of *Prodenia litura*, **33**; grasshoppers in relation to erosion of, **292**; types of, in relation to insects, **48, 282, 531, 628**; review of arthropod fauna of, **177**; types of, in relation to insecticides, **298, 370, 428, 495**; persistence of insecticides in, **179, 369, 400, 521, 581, 582, 702**; review of fumigation of, **177, 240**; survey of data on effects of insecticides on microflora of, **686**
sojae, Melanagromyza
sokolowi, Telenomus
solani, Macrosiphum (*Aulacorthum*)
solanifolii, Macrosiphum (see *M. euphorbiae*)
Solanum, Empoasca fabae on species of, in U.S.A., **305**
Solanum melongena, pests of, in Bulgaria, **394, 554**; not infested by *Macrosteles fascifrons* in Colorado, **163**; aster-yellows virus not transmitted to, by *M. fascifrons*, **649**
Solanum nigrum, susceptibility of, to tomato virus in Australia, **138**; *Phthorimaea operculella* on, in Bulgaria, **554**
Solanum verbascifolium, Tragocephala gorilla on, in Nigeria, **119**
soleiger, Typhlodromus
Solenopsis fugax, predacious on *Sesamia cretica* in Yugoslavia, **394**
Solenopsis geminata, key to workers of, **272**
Solenopsis saevissima richteri (in U.S.A.,) infesting pastures, **521**; bionomics of colony formation by, **164**; key to workers of, **272**; baits for, **264**; chlordane against, **521**
Solenotus, parasitising larvae of *Syringopais temperatella* in Persia, **127**
solida, Anomala
solitaria, Stenaspis
solitarius, Apanteles
Solomon Islands, Cerambycids infesting timber in, **444**
solstitiale, Amphimallon
Somalia, *Schistocerca gregaria* in, **176, 410**
somniaria, Lambdina fiscellaria
Sonchus cornutus, and virus disease of leguminous plants in Sudan, **650**
Sooty Mould, associated with Hemiptera, **125, 622**
Sorbic Acid, against *Aspergillus* in artificial diets for *Pectinophora*, **150**
sordida, Hadena
sordidalis, Lamida (*Spectrotrota*)
sordidula, Megadelphax (*Calligypona*)
sordidus, Cosmopolites
sorghicola, Contarinia
sorghiella, Celama
Sorghum, puparia of *Lixophaga diatraeae* occurring in, in Barbados, **26**; *Chilo zonellus* on, in India, **258**; *Stathmopoda*

auriferella on, in Nigeria, **378**; *C. zonellus* on, in Pakistan, **278**; Cecidomyiid on, in S. Rhodesia, **126**; pests of, in Sudan, **27, 433**; *Elachiptera cornuta* on, in U.S.S.R., **254**; pests of, in U.S.A., **5, 8, 17, 165, 166, 579, 581**; varietal susceptibility of, to insects, **27, 258**; method of collecting insects from, **108**; (stored), insects infesting, **11, 29, 378**; morphological and chemical characters of, in relation to infestation by *Sitophilus oryzae*, **452**; comparison of storage methods for, **29**; BHC treatment of, **541**; sorption of methyl bromide by, **85**

Sorghum bicolor technicum, *Elachiptera cornuta* on, in U.S.S.R., **254**

Sorghum halepense, *Chilo zonellus* on, in Pakistan, **278**; in diet for *Melanoplus differentialis*, **501**

Sorghum sudanense, *Chilo zonellus* on, in Pakistan, **278**; effect of fumigants on germination of, **359**

Sorghum vulgare, effect of fumigants on germination of, **359**

Sosylus, African species of, **378**

Sosylus spectabilis, predacious on Platypodids in W. Africa, **373, 377, 378**; bionomics of, **377**

Sosylus validus, parasitising *Trachyostus aterrimus* in Ghana, **376**

Sound, use of: against *Ostrinia nubilalis*, **439**; in light-traps for other Lepidoptera, **453**

Soy Bean, *Aphis glycines* on, in China, **286**; *Melanagromyza phaseoli* on, in India, **532**; Lepidoptera on, in Italy, **171**; pests of, in Japan, **572, 613**; pests of, in Vietnam, **526**; *Panonychus* sp. on, in Virginia, **19**; varietal susceptibility of, to *Leguminivora glycinivorella*, **572**; aster-yellows virus not transmitted to, by *Macrosteles fascifrons*, **649**; effects of methods of culture of, on populations of *Melanagromyza*, **613**; *M. sojae* on, **161**; seed treatment of, **286**; systemic activity of endrin in, **161**

Soy-bean Meal, hydrolysate of, as attractant for *Ceratitis capitata*, **646**

Soy-bean Oil, in baits for ants, **264, 493**; hydroxylated phosphatides of, for treating insects with lipid extracts, **108**

Soy Bean Pod Borer (see *Leguminivora glycinivorella*)

soyella, *Caloptilia*

Space Vehicles, device for recording activity of insect in, **265**

Spain, pests of fruit trees and vines in, **124, 625**; forest pests in, **678, 679, 680**; *Pieris brassicae* in, **680**; beneficial insects in, **124, 680**; virus infecting Noctuids in, **679**

Spathimeigenia spinigera, parasitising *Neodiprion swainei* in Quebec, **508, 597**; relation of other parasites to, **508, 597**

Spathius canadensis, parasitic on *Magdalis* in Quebec, **4**

Speckled Alder (see *Alnus rugosa*)

spectabilis, *Sosylus*

Spectrophotometry, of insecticide residues, **521**

Spectrotrota sordidalis (see *Lamida*)

Speedsprayer, **501**

spermotrophus, *Megastigmus*

sperryi, *Filatima*

spessivtsevi, *Ipideurytoma*

Sphaeroderma rubidum (on globe artichoke), parasites of, in France, **338**; bionomics of, in Sardinia, **676**; sprays against, **677**

Sphaerophoria cylindrica, attacking aphids in Japan, **412**

Sphaeropsis dalmatica, *Prolasioptera berlesiana* associated with infection of olives by, **420**

Sphagnum, use of, in rearing *Hylemya brassicae*, **219**

sphegeus, *Enoclerus*

Sphenarches caffer, sprays against, on *Cajanus* in Ceylon, **618**

sphenarioides, *Colemania*

Sphenoptera deducta, on *Cyperus tegetum* in India, **44**

Spicaria fumosorosea, used against *Carposina sasakii*, **613**

Spicaria rileyi (see *Beauveria*)

Spiders, on apple trees in Germany, **689**; in Japan, **412, 615**; predacious on noxious arthropods, **3, 24, 30, 390, 413, 492, 668**; beneficial mites destroyed by, **624**; effects of sprays on, **30**

Spilochalcis albifrons, parasitising *Hypera variabilis* in New York, **586**

Spilonota ocellana (on fruit trees), in Bulgaria, **554**; in Quebec, **3**; in U.S.A., **15, 43, 86, 158, 593, 655**; bionomics of, **158, 555**; sex ratio of, **15**; sampling method for larval distribution of, **593**; natural enemies of, **3, 555**; effects of *Bacillus thuringiensis* against, **86**; insecticides against, **3, 655**

Spilosoma imparilis (see *Diacrisia*)

Spilosoma menthastri (see *Diacrisia lubricipeda*)

Spinach, development of *Myzus persicae* on, in England, **302**; insecticide residues on, **266, 361**

spinicornis, *Hoplodictya*

spinigera, *Spathimeigenia*

spinosa, *Amedoria*

spiraecola, *Aphis*

splendana, Cydia (*Laspeyresia*)
splendidella, Dioryctria
Spodoptera exigua, in California, **359**; in Italy, **677**; in E. Pakistan, **623**; on jute, **623**; on tomato, **359, 677**; sprays against, **359, 677**
Spodoptera frugiperda, in Brazil, **446**; in U.S.A., **165, 360, 461**; in Venezuela, **605**; on cereals, **165, 360, 461, 605**; varietal susceptibility of maize to, **360, 605**; on groundnut, **446**; on lucerne, **165**; measures against, **165, 361, 461**
Spodoptera mauritia, map of distribution of, **389**
Spotted Cucumber Beetle (see *Diabrotica undecimpunctata howardi*)
Sprays, factors affecting use of, against lucerne pests, **654**; application of, in relation to locust swarms, **410**; effects of, on populations of *Panonychus ulmi*, **290, 493**; comparative effects of, on pests and their natural enemies, **30, 60, 121, 140, 185, 196, 200, 204, 218, 227, 297, 333, 423, 426, 497, 619, 623, 673, 690**; timing of applications of, **38, 39, 62, 461**; distribution of deposits of, **581**; persistence and rate of loss of deposits of, **90, 467, 484, 616**; assessment of deposits of, **87, 271**; effect of particle size of, **299**; concentration and efficiency in relation to volume of, **341**; effects of additives on efficiency of, **52, 85, 94, 95, 170, 210, 512**; applied from aircraft, **24, 49, 52, 83, 87, 88, 147, 151, 166, 217, 220, 229, 284, 450, 581, 682**; ground equipment for applying, **116, 170, 212, 229, 339, 462, 501, 697**; question of clogging of nozzles by, **151**; quantitative formulation of, **695**
Sprouting Broccoli, Italian (see Calabrese)
Spruce, *Cephalcia abietis* on, in Austria, **684**; *Psylla melanoneura* on, in Britain, **230**; pests of, in Canada, **216, 283, 284, 565, 572, 592, 593, 594, 595, 601, 662, 663, 666, 702**; pests of, in Czechoslovakia, **69, 70, 465**; pests of, in France, **205, 206, 546**; pests of, in Germany, **103, 242, 243, 334, 335, 337, 396, 428, 432, 463, 464, 629**; *Chermes* spp. on, in India, **598**; *Dioryctria abietella* on, in Italy, **541**; Coleoptera infesting timber of, in Norway, **345**; *Dendroctonus micans* on, in U.S.S.R., **183**; pests of, in U.S.A., **12, 219, 492, 595, 702**; pests of, in Yugoslavia, **55, 327, 465**; net for collection of *Choristoneura fumiferana* from, **99**; preferences of *C. fumiferana* for species of, **492**; attraction of *Pristiphora abietina* to terminal buds of, **463**; development of *Ptilinus pectinicornis* in timber of, **467**; effects on sawflies of sap from resistant species of, **629**; relation between smoke damage and infestation of, **70**; secondary causes of timber losses of, **12**; systemic activity of insecticides in, **592**
Spruce, Black (see *Picea mariana*)
Spruce, Engelmann (see *Picea engelmanni*)
Spruce, Red (see *Picea rubens*)
Spruce, Sitka (see *Picea sitchensis*)
Spruce, White (see *Picea glauca*)
Spruce Budworm (see *Choristoneura fumiferana*)
spumarius, Philaenus (see *P. leucophthalmus*)
spuria, Gossyparia
spurius, Apanteles
sputator, Agriotes
squalidus, Sciaphobus
Squash, *Chrysomphalus bifasciculatus* reared on, **225** (See also *Cucurbita*)
stabulans, Lydella
staphyleae, Rhopalosiphoninus
Staphylococcus epidermidis, in *Pseudaletia unipuncta*, **402**
Starch, question of *Heliothis zea* in relation to content of, in maize, **97**
Stathmopoda auriferella, on field and stored sorghum in Nigeria, **378**; characters of, **378**
Statistical Methods, for evaluation of losses in cotton yield caused by *Pectinophora gossypiella*, **360**; for evaluation of light-trap catches, **472**; in relation to mathematical models in pest control, **573**
Stauffer R-1504 (see O,O-Dimethyl S-Phthalimidomethyl Phosphorodithioate)
Stearic Acid, use of, in experiments with *Adoxophyes orana*, **48**; as constituent of spray additive, **94**
Stegasta basqueela, on groundnut in Brazil, **446**
Stegobium paniceum, tests of antimetabolite for protection of foodstuffs against, **259**
Stenaspis solitaria, attraction of, to *Senecio longilobus* in Arizona, **516**
Steneotarsonemus fragariae (on strawberry), in Australia, **309**; in Germany, **395**; in Poland, **331**; population fluctuations of, **331**; acaricides against, **164, 332, 395**
Steneotarsonemus pallidus (Banks), bionomics of, on greenhouse plants in Victoria, **309**; sprays against, **309**
Steneotarsonemus pallidus, auct. (see *S. fragariae*)
Steneotarsonemus violae sp. n., associated with Eriophyids on *Viola cornuta* in Sweden, **560**

Stenichneumon rufinus, parasitising *Sesamia cretica* in Yugoslavia, **394**
Stenobracon deesae (see *Glyptomorpha*)
Stenocarus fuliginosus, bionomics and incidence of, on *Papaver somniferum* in Yugoslavia, **55, 56**; measures against, **56**
Stenodiplosis bromicola, bionomics and parasites of, on *Bromus* spp. in U.S.S.R., **74**
Stenomesius, review of species of, **482**
Stenomesius ceramidiae sp. n., parasitising *Ceramidia viridis* in Ecuador, **482**
stenostoma, Labidostomis
Stephanitis pyri, in Persia, **128**; in Poland, **392**; bionomics of, on fruit and forest trees, **128, 392**; sprays against, **128**
Stephanoderes hampei (on coffee), in Central African Republic, **440**; in Ivory Coast, **373, 434**; ecology of, **434**; parasites of, **373, 434, 435**; fungus infesting, **435**; endrin sprays against, **440**
stephanoderis, Cephalonomia
Sterculia acerifolia, life-cycle of *Lyctus brunneus* on timber of, **642**
Stereum, relation of Siricids to, **4**
sternale, Trogoderma
Sternochetus mangiferae, on mango in Vietnam, **526**
sternodontis, Sarcodexia (see *Sarcophaga lambens*)
Sterilants, Chemical (see Chemosterilants)
Stethorus keralicus sp. n., predacious on *Raoiella indica* in India, **235**
Stethorus punctillum (predacious on Tetranychids), in Austria, **65**; in Holland, **42**; in Sicily, **200**; bionomics of, **665**; effects of acaricides on populations of, **42, 65, 200**
Stethorus utilis, predacious on *Eutetranychus banksi*, **372**; established in Texas, **372**
Sthenias, species of, in Oriental region, **643**
Sthenias cylindrator, bionomics of, on *Aleurites fordii* in Swaziland, **634**; measures against, **634**
sticticalis, Loxostege
Stigmasterol, in diet for *Anthonomus grandis*, **498**
stigmatera, Agathis
Stigmella malella, bionomics of, on apple in Italy, **37, 38**; tests and uses of insecticides against, **38**
Stipa, species of, as food-plants for grasshoppers, **604**
Stiroma bicarinata, on wheat in Finland, **471**; question of natural enemies of, **471**
stollii, Chrysocoris
Stomatomyia littoralis (parasitising *Listroderes costirostris obliquus*), in Argentina and Uruguay, **312**; introduced into Australia, **312**
Stone Pine (see *Pinus cembra*)
strandi, Epicampoptera
Strauzia longipennis, damaging sunflower in Manitoba, **140**
Straw, occurrence of stored-products mites in, **184**
Strawberry, *Tortrix capensana* on, in S. Africa, **112**; pests of, in Australia, **106, 287, 309**; aphids on, in Austria, **67**; pests of, in Britain, **304, 380, 535**; *Tetranychus* spp. on, in Bulgaria, **394**; pests of, in Germany, **242, 395**; *Steneotarsonemus fragariae* on, in Poland, **331**; aphids on, in U.S.A., **351, 586**; *Pseudococcus* sp. on, in Yugoslavia, **297**; Hemiptera and virus diseases of, **351, 352, 535, 536, 586**; reduced-pressure treatment of, **164**; insecticide residues on, **304, 380**; toxicity of insecticides to, **242, 288, 396**; restrictions on use of acaricides on, **287**
Strawberry, Wild, *Capitophorus jacobi* on, in, California, **352** (See also *Fragaria*)
Strawberry Clover (see *Trifolium fragiferum*)
Strawberry Mite (see *Steneotarsonemus fragariae*)
Strawberry Weevil (see *Rhynchites germanicus*)
Streptococcus, in Lepidoptera, **319, 402**
Streptomyces, antibiotics derived from species of, **502, 578**
Streptomyces hygroscopicus, **502, 578**
Streptomyces nodosus, **578**
Streptovitacin A, effects of: on aphids, **502**; on Tetranychids, **578**
striatalis, Diatraeophaga
striatella, Laodelphax (*Calligypona, Delphax*)
striatula, Crematogaster
striatus, Psammotettix (*Laevicephalus*)
strictus, Ollarianus
strigatus, Eumerus
Striped Cucumber Beetle (see *Acalymma vittata*)
Strobane, in dusts and sprays against *Anthonomus grandis* and *Heliothis zea*, **87**; and DDT, **86**
strobi, Pissodes
Strumeta (see *Dacus*)
stultalis, Psara
Sturmia bohemica, parasitising *Gilpinia hercyniae* in Quebec, **663**; host preferences of, **512**
Sturmia gilva, parasitising *Bupalus piniarius* in U.S.S.R., **71**

Sturmia harrisinae, parasitising *Harrisina brillians* in U.S.A., **78**
Sturmia scutellata, associated with *Dendrolimus superans* in U.S.S.R., **75**
Sturmia vicina, reared from larvae of *Celerio lineata livornica* in Yugoslavia, **194**
Sturmiopsis inferens, parasitising *Sesamia calamistis* in Madagascar, **514**; question of introduction of, into Réunion, **514**
stygia, Japspidia (*Lithacodia*)
Stylopalpia costalimae, on groundnut in Brazil, **446**
suasa, Hadena
Subalpine Fir (see *Abies lasiocarpa*)
subclavatus, Endasys
Subcoccinella vigintiquatuorpunctata, bionomics of, on lucerne in Bulgaria, **553**; effects of temperature on development of, **553**; insecticides against, **553**
subelongatus, Ips
subfasciatus, Zabrotes
subfumatus, Meligethes
submetallicus, Ooencyrtus
subpropinquella, Depressaria
subrufa, Thaia (*Thamnotettix, Zygina*)
Substanz 215, fumigant action of, against Coleoptera, **167**
subterraneus, Aphodius
Sucrose, in diets for insects, **8, 485**; effects of, on survival and fecundity of *Prodenia lituria*, **33**; used in experiments with ^{65}Zn, **484**
Sudan, cotton pests in, **105, 229, 431, 433, 627**; pests of groundnut in, **433**; maize pests in, **433**; pests of sorghum in, **27, 29, 433**; pests of sesame in, **433**; *Podagrica puncticollis* on kenaf in, **433**; pests of vegetables in, **105, 431, 433, 650**; outbreaks of *Locusta migratoria migratorioides* in, **174**; millepedes in, **433**; virus diseases of beans and other plants in, **126, 650**
Sudan Grass (see *Sorghum sudanense*)
sudanensis, Caliothrips (*Hercothrips*)
suecica, Eurytoma
Sugar, content of, in relation to infestation of pines by *Diprion pini*, **629**; use of, in study of moisture requirements of parasitic Hymenoptera, **91**; effects of, on action of anticoagulants on *Tribolium confusum*, **21**; in diets for insects, **72, 127, 287, 523**; use of, for attracting parasites, **71**; effects of defoliation on content of, in beet, **638**; in bait-sprays, **646**
Sugar Maple (see *Acer saccharum*)
Sugar-cane, pests of, in French Antilles, **513**; *Diatraea saccharalis* on, in Barbados, **25**; *Migdolus morretesi* on, in Brazil, **446**; *Scirpophaga nivella* on, in Formosa, **572**; pests of, in Grenada, **279**; insects on, in India, **43, 49, 413, 527**; *Proceras sacchariphagus* on, in Java, **276**; *Diatraea saccharalis* on, in Louisiana, **153, 501**; pests of, in Madagascar, **233, 234, 441, 513, 514, 515**; pests of, in Mauritius, **276, 640**; pests of, in Mexico, **109**; moth-borers on, in Pakistan, **277**; pests of, in Réunion, **514, 640**; *Aeneolamia varia saccharina* on, in Trinidad, **409**; pests of, in Venezuela, **284, 296, 606**; pests of, in Vietnam, **526**; *Elasmopalpus lignosellus* on, in West Indies, **648**; nature of damage by *Chilo infuscatellus* to, **277**; morphology of, in relation to resistance to *S. nivella*, **572**; Fiji disease of, **233**; diseases of, in relation to pests, **285**; index of papers on entomology of, **348**
Suillia lurida, morphology of immature stages of, **292**
sulcifrons, Sitona
Sulfotep, susceptibility or resistance to, in strains of *Tetranychus telarius*, **691**; as fumigant, **691**
Sulfoxide, effects of, on metabolism of aldrin, **581**
Sulphenone (see p-Chlorophenyl Phenyl Sulphone)
Sulphur, against Hemiptera, **34, 509**; against Lepidoptera, **34**; against Eriophyids, **67, 82, 170, 308, 342, 371, 611**; against other mites, **53, 287**; dusting with, **53, 287, 371**; spraying with, **67, 82, 170, 287, 308, 342, 371, 611**; in mixed dusts, **34**; in mixed sprays, **30, 426**
Sulphur, Radioactive, insecticides labelled with, **617**
Sulphuryl Fluoride, mode of action of, in termites, **520**
Sumatra, *Nacoleia octasema* in, **670**
Sumithion (see O,O-Dimethyl O-3-Methyl-4-nitrophenyl Phosphorothioate)
Sunflower (see *Helianthus annuus*)
superans, Dendrolimus
superbus, Adelphocoris
suppressalis, Chilo
surinamensis, Oryzaephilus
Suspensions, determination of stability of, **46**
Susumia exigua, bionomics and natural enemies of, on rice in Fiji, **270**; other mortality factors of, **270**; misidentified as *Marasmia venilialis*, **270**
sutor, Platysenta
suturalis, Sitona
swainei, Neodripion

Swaziland, *Sthenias cylindrator* on *Aleurites fordii* in, **634**
Swede, *Psylliodes chrysocephalus* on, in Britain, **211**; *Hylemya* spp. on, in Canada, **217, 281, 602**; aphids on, in Denmark, **344, 427**; *Phyllotreta* spp. on, in Germany, **428**; *Brevicoryne brassicae* on, in New Zealand, **180**; *Hylemya* spp. on, in Norway, **345**; use of, in rearing *H. brassicae*, **219**; seed treatment of, **345, 428, 572**; insecticide residues in, **281**; effects of insecticides on, **345, 428, 572**
Sweden, beet pests in, **637**; pests of cereals and grasses in, **560, 561, 562, 563**; diseases of cereals and grasses in, **562, 563**; mites on fruit trees in, **561**; mites on *Viola cornuta* in, **561**; *Tetranychus telarius* on cucurbits and other greenhouse plants in, **562**; forest pests in, **41, 470, 628**; pests of stored cereals in, **561, 687**; temperature limiting occurrence of storage pests in, **561**; beneficial insects in, **41, 628**; legal requirements for use of insecticides in, **468**
Sweet Clover (see *Melilotus* spp.)
Sweet Pea (see *Lathyrus odoratus*)
Sweet Pepper (see *Capsicum*)
Sweet Potato, pests of, in Fiji, **121**; *Cylas formicarius* on, in Formosa, **612**; *Geococcus coffeae* on, in India, **640**; pests of, in U.S.A., **156, 575**; Hemiptera transmitting viruses of, **350, 575**; trichlorphon residues on, **585**
Swingfog Machine, **372**
Switzerland, *Rhopalosiphum padi* and yellow-dwarf virus of cereals in, **60**; new mite on grasses in, **688**; orchard pests in, **40, 400, 636, 691**; *Aceria essigi* on blackberry in, **40**; *Aegeria tipuliformis* on black currant in, **688**; *Argyrotaenia pulchellana* on vines in, **40**; potato pests in, **248, 471**; forest pests in, **247, 248**; *Hydroecia petasitis* on *Petasites hybridus* in, **280**; species of *Macrosiphum* in, **471**; possibility of development of *Popillia japonica* in, **688**; beneficial insects in, **247, 248, 280**; diseases of insects in, **482, 688, 692**
Sylepta derogata, on cotton in Ceylon, **618**
Sylepta lunalis, new food-plants of, in India, **571**
sylvestrella, Dioryctria
sylvestris, Cricotopus
Symmerista albifrons, infection of, by nematode and associated bacterium, **577**
Sympherobius amicus, destroying eggs of *Planococcus citri* in Sicily, **198**
Sympiesis sericeicornis, parasite and hyperparasite of *Lithocolletis blancardella* in Italy, **330**
Sympiesis viridula, parasitising *Sesamia cretica* in Yugoslavia, **394**
Symposium on Phytopharmacy and Phytiatry, Thirteenth International, **50–53**
Synanthedon (see *Aegeria*)
Synetaeris tenuifemur sp. n., parasitising *Choristoneura fumiferana* in Canada, **599**
Syngrapha epigaea, on blueberry in New Brunswick, **569**
Syntermes, on groundnut in Brazil, **446**
Syntomosphyrum indicum (parasitising *Dacus*), in Hawaii, **311**; introduced into Australia, **311**
Syria, *Eurygaster integriceps* in, **313**
syriacus, Scymnus
Syringopais temperatella, bionomics and adult habits of, on cereals and other plants in Persia, **127**; parasites of, **127**; traps for, **127**
Syrphus, attacking *Myzus humuli* in Bulgaria, **324**
Syrphus balteatus (predacious on aphids), **518**; in Czechoslovakia, **623**; in Japan, **412**; effects of demeton sprays on populations of, **623**
Syrphus corollae, predacious on aphids, **626**; feeding habits in relation to development of, **626**
Syrphus ribesii, attacking aphids in Japan, **412**
Syrphus vitripennis, predacious on aphids in Switzerland, **148**; effects of sprays on populations of, **248**
Systasis encyrtoides, parasitising *Contarinia medicaginis* in France, **550**
Systates exaptus, on maize in S. Rhodesia, **126**
Systole, damaging carrot seed in Idaho, **588**
Systole albipennis, on fennel in India, **257**; new parasite reared from, **257**
Systole geniculata, **588**
Systox (see Demeton)
szentivanyi, Pantorhytes

T

tabaci, Bemisia; *Thrips*
tabaniformis, Paranthrene (*Sciapteron*)
Tachina rustica, parasitising *Athalia rosae* in Germany, **684**
Tachyporus obtusus, beneficial mites destroyed by, in Germany, **624**
Taeniothrips laricivorus, on larch in Germany, **242**; map of distribution of, **389**; methyl-demeton against, **242**

Taeniothrips pini, on spruce in Germany, **396**
Taeniothrips simplex, map of distribution of, **389**
Taiwan (see Formosa)
Talc, killing Bruchids in stored beans, **300**; effects of, on production of webbing by *Tetranychus telarius*, **207**; as carrier for pyrethrum dust, **106**; compatibility of, with heptachlor, **299**
talitzkii, *Phygadeuon*
Tallow and Tallow Oil, in baits for fire ants, **264**
Tamarack (see *Larix laricina*)
Tamarind (*Tamarindus indica*), *Phycita orthoclina* on, in Kerala, **675**
tamarindi, *Opsiphanes*
Tanganyika, coffee pests in, **517, 669**; *Thrips nigropilosus* on pyrethrum in, **436**; pests of other crops and stored products in, **540**; *Oryctes monoceros* in, **590**; grasshoppers and locusts in, **229, 387, 693, 701**; parasites of locusts in, **105**; natural mortality of *Leucoptera* spp. in, **669**; vectors of viruses in, **540**
Tannin, relation of, to infestation of sorghum seeds by *Sitophilus oryzae*, **452**
Tantalum, Radioactive, insects labelled with, **525**
tapatapaoanus, *Apanteles*
Tar Distillates, in sprays and dormant sprays against Coccids, **458, 620**; and Sevin, **458**
Taraxacum officinale, as food-plant of *Melanoplus bilituratus*, **511**; experiments with *Protoparce sexta* on, **303**
tardus, *Chermes*
Targionia vitis, on vines in Italy, **630**; parasite and hyperparasite of, **630**
Tarichium, larvae of *Autographa gamma* infested by species of, in Germany, **234**
Tarpaulins, use of, in fumigation of apples, **84**
tarsalis, *Ctenicera*
tarsata, *Trigonura*
Tarsonemus, species of, in stored wheat in Saskatchewan, **221**
Tarsonemus pallidus, auct. (see *Steneotarsonemus fragariae*)
Tasmania, *Steneotarsonemus fragariae* on strawberry in, **309**
tasmaniae, *Aphodius*
TDE (see DDD)
Tea, pests of, in Ceylon, **619, 672, 673**; pests of, in India, **530, 620**; *Adoxophyes orana* on, in Japan, **316**; *Brevipalpus phoenicis* on, in Java, **53**; *Ostrinia nubilalis* on, in U.S.S.R., **297**; effects of constituents of, on *A. orana*, **48, 317**; review of Coccids on, **530**; pests of shade trees for, **528, 619**
Tectona grandis (Teak), *Xyleborus destruens* on, in Java, **517, 638**; factors influencing resistance of, to termites, **110**
tectus, *Ptinus*
Tedion, toxicity of, to insects, **227, 424**; against *Phyllocoptruta oleivora*, **371**; against Tetranychids, **9, 42, 139, 207, 209, 227, 290, 424, 433, 543, 552, 635, 658, 669, 691**; resistance to, in strains of Tetranychids, **50, 93, 94**; effects of, on beneficial arthropods, **2, 42**; resistance to, in predacious mites, **491**; factors affecting toxicity of, **139**; in dusts, **164**; in sprays, **2, 93, 227, 290, 371, 552, 658, 669**; residues of, on pears, **496**; contamination of adjacent crops by aerial application of, **164**; and ethion, **2**; and Fac 20, **543**; and fungicides, **371**; and Kelthane, **94, 543**; and Kepone, **371**; and malathion, **669**; homologues of, **50, 209**
tegalensis, *Chionaspis* (*Aulacaspis*)
telarius, *Tetranychus*
Teleia modesta, on pistachio in Turkmenia, **40**; parasite of, **40**
Telenomus, egg-parasite of *Maliarpha separatella* in Madagascar, **442**
Telenomus alecto, egg-parasite of Pyralids in West Indies, **279**
Telenomus dignoides, egg-parasite of *Scirpophaga nivella* in Pakistan, **277**
Telenomus laeviusculus, bionomics of, parasitising eggs of *Malacosoma neustria* in U.S.S.R., **72**
Telenomus podisi, egg-parasite of *Oebalus pugnax* in Texas, **83, 364**
Telenomus sokolowi, egg-parasite of *Eurygaster integriceps* in U.S.S.R., **182**
Teleogryllus commodus, sterility between strains of, in Australia, **443**
Telodrin (see 1,3,4,5,6,7,8,8-Octachloro-3a,4,7,7a-tetrahydro-4,7-methanophthalan)
Temnochila, predacious on *Conophthorus* in California, **306**
Temnorhinus (see *Cleonus*)
temperatella, *Syringopais*
Temperature, influence of humidity on effects of, on insect development, **288, 289**; review of injuries to insects by, **294**; device for producing fluctuations of, **572**; effects of: on aphids, **141, 225, 242, 269, 352, 394, 550**; on resistance of lucerne to aphids, **263, 264, 352**; on other Hemiptera, **316, 665**; on Coleoptera, **29, 75, 104, 107, 122, 224, 282, 356, 382, 387, 430, 431, 434, 449, 470,**

508, 539, 553, 589, 614, 661, 674, 682; on Diptera, **317, 564;** on Hymenoptera, **54, 202, 275;** on attractiveness of larvae of *Neodiprion lecontei* to parasites, **512;** on Lepidoptera, **28, 31, 32, 142, 145, 146, 147, 187, 220, 236, 264, 289, 293, 307, 332, 361, 365, 383, 387, 388, 401, 465, 512, 554, 615, 637;** on susceptibility of Lepidoptera to bacteria, **75, 403;** on overwintering of *Limothrips cerealium*, **169;** on behaviour of *Locustana pardalina*, **26, 27;** on morphogenesis and hatching in Phasmatids, **106;** on mites, **20, 138, 236, 315, 600, 692;** on natural enemies of pests, **383, 439;** on parasite-host synchronisation, **389;** on toxicity and persistence of insecticides, **84, 139, 436, 441, 578, 678, 696;** on sorption of methyl bromide by stored wheat, **93;** on toxicity of fumigants to stored foodstuffs, **89, 359** (See also Cold-hardiness)

tempestiva, Anisoplia

Tenebrio molitor, infesting flour in Egypt, **503;** effect of high-frequency radiation on, **52;** tests of antimetabolite for protection of foodstuffs against, **259;** insecticides against, **148, 292, 503**

Tenebroides mauritanicus, influence of climate on infestation of flour mills by, **466;** carbon-dioxide expiration by larvae of, at reduced pressures, **301**

tenellus, Circulifer; *Gelis*

Tennessee, *Hypera variabilis* on lucerne in, **368**

tenuicornis, Habrocytus

tenuifemur, Synetaeris

Tenuipalpus granati, bionomics of, on pomegranate in Bulgaria, **417**

Teosinte (see *Euchlaena mexicana*)

Tepa (see Tris(1-aziridinyl)phosphine Oxide)

Tephrina arenacearia, on lucerne in Bulgaria, **188**

TEPP, against *Ceratitis* spp., **111;** toxicity of, to *Harpalus rufipes*, **380;** against Tetranychids, **199, 543, 656;** susceptibility or resistance to, in strains of *Tetranychus telarius*, **203;** comparative toxicity of, to arthropods, **155;** use of, in testing susceptibility of *T. telarius* to acaricides, **83;** inactivation of, by plants, **83;** anticholinesterase activity of, **355;** in bait-sprays, **111;** in sprays, **199, 543;** and chlorbenside, **199, 543**

Terminalia ivorensis, Coleoptera infesting logs of, **374**

Terminalia superba, Doliopygus dubius infesting, in Ghana and Nigeria, **373;** gum of, destroying *D. dubius*, **373;** factors affecting attraction of bark-beetles to billets of, **694;** treatment of plywood manufactured from, **233**

terminalis, Pissodes

terminifera, Chortoicetes

Termites, report of work on, in W. Africa, **235;** in Australia, **110, 609;** in Brazil, **446;** in France, **206;** in India, **619;** in Iraq, **540;** in Kenya, **436;** in New Guinea, **517, 703;** in Sudan, **433;** in U.S.A., **21, 702;** damaging crops, **238, 433, 436, 517;** attacking trees, **21, 540, 609;** resistance of timbers to attack by, **100;** attacking timber, **110, 173, 206, 643;** damaging books, **517;** damaging electrical installations, **234, 703;** determination of resistance of materials to, **100, 236;** rôle of, in control of *Analeptes trifasciata*, **375;** colony development by, **292, 348;** attractants for, in fungus-infested timber, **494;** fungus infesting, **406;** tests of timber extracts against, **110;** toxicity of insecticides to, **236, 250;** mound and soil treatments against, **400, 619, 702;** other measures against, **398;** metabolism of sulphuryl fluoride in, **520;** labelled with radioisotopes, **520;** symposium on, **398**

Ternstroemia gymnothera, resistance of timber of, to attack by termites in China, **100**

Terpenes, attractiveness of, to *Myelophilus piniperda*, **59**

Terpentol, in sprays against *Leptinotarsa decemlineata*, **476;** composition of, **476**

terraenovae, Phormia

terraereginae, Empoasca

terrestris, Bombus

Tersilochus argentinensis, parasitising *Listroderes costirostris obliquus*, **312;** introduced into Australia, **312;** *T. parkeri* mating with, **312**

Tersilochus melanogaster, parasitising *Psylliodes chrysocephalus* in Germany, **334**

Tersilochus parkeri, parasitising *Listroderes costirostris obliquus*, **312;** in Argentina and Uruguay, **312;** introduced into Australia, **312;** mating with *T. argentinensis*, **312;** strains of, **312**

tessmani, Mesohomotoma

tessulatus, Ctenomorphodes

testaceipes, Aphidius; *Pachnephorus*

testaceorufatus, Bracon

testaceus, Opius; *Pseudophilus*; *Xyleborus* (see *X. perforans*)

testudinaria, Eurygaster

testudinea, Hoplocampa

testulalis, Maruca

Tetanops myopaeformis (on beet in Alberta), bionomics and habits of, **145, 597**; colour preferences of, **145**; traps for, **145**; insecticides against, **698**
2,4,5,4′-Tetrachlorodiphenyl Sulphide, toxicity of, to Tetranychids, **209**; resistance to, in Tedion-resistant strain of *Tetranychus telarius*, **50**; low toxicity of, to insects and mammals, **210**; in sprays, **209**
2,4,5,4′-Tetrachlorodiphenyl Sulphoxide, toxicity of, to Tetranychids, **209**
Tetradifon (see Tedion)
Tetramesa hordei, bionomics and parasites of, on barley in Prince Edward Island, **599, 605**; varietal susceptibility of barley to, **605**
Tetramorium caespitum, predacious on *Sesamia cretica* in Yugoslavia, **394**
Tetranychus, on cacao in W. Africa, **119**; on strawberry in Germany, **395**; effects of feeding by undescribed species of, on cereals in Manitoba, **2**; question of transmission of virus disease by, **2**; sprays against, **119, 395**
Tetranychus atlanticus, in Bulgaria, **394**; in California, **495**; on cotton, **394, 495**; on fruits and vegetables, **394**; acaricides against, **495**; resistance to demeton in strains of, **495**; not breeding with congeners, **303**
Tetranychus canadensis, **2**
Tetranychus cinnabarinus, in Egypt, **32**; in Holland, **303, 439**; in Italy, **303**; in U.S.A., **265, 365**; on cotton, **265**; on *Buddleia*, **32**; on peach, **439**; predators of, **32, 439, 491**; effects of acaricides on, **366**; toxicity of insecticides to, **265**; breeding experiments with congeners and, **303**; question of synonymy of, **303**
Tetranychus dianthica, in greenhouses in Germany, **439**; mite predacious on, **439**
Tetranychus hydrangeae, not breeding with congeners, **303**
Tetranychus lambi, acaricides against, on strawberry in Queensland, **287**
Tetranychus ludeni, on pyrethrum in Kenya, **436, 541**; on strawberry in Queensland, **287**; acaricides against, **287, 436, 541**; effects of insecticides on populations of, **436, 541**
Tetranychus macfarlanei, on *Hibiscus esculentus* and cucurbits in India, **415**
Tetranychus mcdanieli, on apples in British Columbia, **595**; acaricides against, **82, 450, 595**; resistance to Kelthane in strains of, **82**
Tetranychus multisetis, in California, **303**; breeding with *T. cinnabarinus*, **303**; question of synonymy of, **303**
Tetranychus neocaledonicus, not breeding with congeners, **303**
Tetranychus pacificus, on cotton and maize in California, **147, 495**; acaricides against, **147, 495**; resistance to demeton in strains of, **495**
Tetranychus sinhai sp. n., on barley and grasses in Manitoba, **572**
Tetranychus telarius, in S. Africa, **209**; in Argentina, **285**; in Austria, **65, 473**; in Britain, **210**; in Bulgaria, **394**; in Ceylon, **673**; in Egypt, **29**; in France, **552**; in Germany, **590**; in Holland, **41, 50, 439**; in Israel, **635**; in Italy, **199, 208**; in Kenya, **669**; in Morocco, **113**; in Norway, **691**; in Ontario, **214, 600**; in Queensland, **287**; in Rumania, **319**; in Sweden, **562**; in Uganda, **434**; in U.S.A., **147, 366, 491, 495, 503, 578, 590, 655**; on beans, **203, 394**; on beet, **635**; on cucumber, **210, 439**; on egg-plant, **394**; on *Citrus*, **199, 208, 394**; on peach, **42, 208, 214, 394, 578**; on plum, **203, 394**; on other fruit trees, **208, 214, 473, 552, 600, 655**; on hops, **203**; on strawberry, **287, 394**; on vines, **319, 473**; on cotton, **29, 113, 285, 394, 495, 534, 635, 669**; varietal resistance of cotton to, **29, 30**; on maize, **147**; on tea, **673**; on ornamental plants, **10, 11, 203, 491, 691**; on greenhouse plants, **203, 562**; on *Lamium album*, **203**; food-plant preferences of, **199**; reversion virus of black currant not transmitted by, **343**; bionomics of, **199, 319, 473**; factors affecting fecundity and egg-development of, **96, 139, 206, 583**; effects of temperature on, **139, 236**; natural enemies of, **42, 65, 141, 200, 439, 491**; competition between *Panonychus ulmi* and, **214, 600**; aspirator for collecting, **139**; cage for, **139**; effects of antibiotics and chemosterilants on, **578**; tests and uses of acaricides against, **8, 9, 11, 41, 42, 45, 51, 80, 113, 138, 147, 150, 199, 200, 208, 209, 210, 285, 287, 319, 366, 424, 425, 432, 450, 495, 503, 521, 534, 552, 562, 635, 655, 669, 670**; effects of dusts on production of webbing by, **207**; question of non-toxic effects of Sevin on, **141**; favoured by insecticides, **670**; factors affecting toxicity of acaricides to, **139**; susceptibility or resistance to acaricides in strains of, **41, 42, 50, 80, 203, 209, 491, 495, 625, 691**; genetic resistance to organophosphates in, **363, 590**; methods for determining susceptibility of, to acaricides, **83**; members of complex of, **29, 30, 534,**

669; not breeding with congeners, 303
Tetranychus urticae (see *T. telarius*)
Tetranychus viennensis (on fruit trees), in Austria, 65, 473; in France, 552; in Greece, 60; in Sweden, 562; bionomics of, 473; effects of temperature on, 236; *Typhlodromus pyri* predacious on, 65; sprays against, 552, 562; diverse effects of insecticide sprays on, 60
Tetrastichus, parasitising *Alurnus humeralis* in Ecuador, 520; parasitising *Stenodiplosis bromicola* in U.S.S.R., 74
Tetrastichus amethystinus, hyperparasite of *Lithocolletis blancardella* in Italy, 330
Tetrastichus cyclogaster, parasitising *Lithocolletis blancardella* in Italy, 330
Tetrastichus giffardianus (parasitising *Dacus*), introduced into Australia, 311; in Hawaii, 311
Tetrastichus pseudoeceticola, parasitising *Rhyacionia buoliana* in Argentina, 645; as hyperparasite of *R. buoliana*, 646
Tetrastichus rhosaces, parasitising *Cassida deflorata* in France, 339
Tetrastichus sajoi, in Hungary, 133; in U.S.S.R., 133; bionomics of, attacking *Aceria phloeocoptes*, 133; effects of DDT on populations of, 133
Tetrastichus turionum, parasitic and hyperparasitic on *Exoteleia dodecella* in Czechoslovakia, 68
Texas, pests of *Citrus* in, 371, 372; *Aegeria exitiosa* on peach in, 490; cotton pests in, 86, 87, 95, 159, 160, 360, 362, 367, 497, 582; *Trichoplusia ni* on crucifers in, 6; pests of melon in, 14; pine pests in, 77; *Aphis maidis* on barley in, 271; pests of rice in, 83, 364; pests of field or stored sorghum in, 8, 11, 579; *Bruchus brachialis* on *Vicia villosa* in, 97; migration of *Macrosteles fascifrons* in, 152; natural enemies of pests in, 83, 364, 372
Textiles, Dermestids infesting, 108; digestion of, by *Tineola bisselliella*, 516; impregnation of, with antimetabolite against insects, 259 (See also Woollen Fabrics)
textor, *Hyphantria cunea*
Thaia, gen. n., characters of, 42, 43
Thaia oryzivora sp. n., on rice in Siam, 42
Thaia (*Thamnotettix*) *subrufa*, 43
Thanasimus undulatus, predacious on *Dendroctonus ponderosae* in British Columbia, 662
Thanite, ineffective against *Prodenia litura*, 414; ineffective in sprays against *Locusta migratoria*, 621
Thaumetopoea pityocampa, on pines in France, 206, 549, 550; virus diseases of, 549, 550; *Bacillus thuringiensis* against, 550
theae, *Fiorinia*
Thecla pruni, on plum in Bulgaria, 417
Thecodiplosis piniresinosae sp. n., on *Pinus resinosa* in Wisconsin, 702
Thelohania, infecting *Pseudaletia unipuncta*, 407; activation of polyhedrosis virus by, 407
Theobroma cacao (see Cacao)
theobroma, *Distantiella*
Therioaphis maculata (on lucerne in U.S.A.), varietal susceptibility of lucerne to, 98, 156, 263, 266, 352; natural enemies of, 88, 306; resistance to phosphorus compounds in strains of, 156
Theronia, species of, parasitising *Lymantria dispar* in New York, 665, 666
Thimet (see Phorate)
Thiodan, against aphids, 14, 21, 262, 586; against other Hemiptera, 163, 504, 698; ineffective against Coccid, 96; against Diptera, 21, 132, 152, 243, 335, 367, 384, 550, 687; against Coleoptera, 19, 85, 132, 153, 323, 335, 447, 687, 698; against Lepidoptera, 14, 16, 21, 81, 82, 85, 163, 308, 365, 414, 442, 477, 490, 580, 647; ineffective against *Phthorimaea operculella*, 137; against grasshopper, 163; ineffective against *Locusta migratoria*, 621; against mites, 82, 164, 170, 308; ineffective against *Tetranychus telarius*, 9; against cotton pests, 441; harmless to bees, 299, 459; effects of, on other beneficial arthropods, 2, 104, 491, 690; toxicity of, to fish and mammals, 299; in aerosols, 132, 580, 687; in dusts, 262, 323, 441, 447, 550, 687; in sprays, 14, 16, 19, 21, 81, 82, 85, 96, 132, 137, 153, 163, 167, 170, 243, 308, 335, 365, 367, 390, 441, 442, 477, 490, 491, 504, 550, 586, 612, 647, 687, 690, 698; as deposit, 690; aircraft application of, 81, 335, 687; soil treatment with, 16; treatment of mushroom beds with, 384; vacuum treatment of strawberry plants with, 164; as plant dip, 580; residues of, on plants, 16, 167, 496; determination of residues of, 108; tolerance limit for, 16; experiments on recovery of, from cigarette smoke, 167; effectiveness of, increased by wetting agent, 170; and acrylic polymers, 580; and DDT, 82, 85
Thiodemeton (see O,O-Diethyl S-2-(Ethylthio)ethyl Phosphorodithioate)
Thiofuradene, experiments with Coleoptera and, 501

Thiometon, against aphids, **129, 186, 187, 324, 475, 556, 612, 685**; ineffective against *Prays oleellus*, **321**; against mites, **185, 319, 332**; resistance to, in strains of *Tetranychus telarius*, **691**; in sprays, **129, 185, 186, 187, 324, 332, 475, 556, 612, 685**; applied from aircraft, **129**; systemic action of, **319**; effects of, on physiology of beans, **556**; development of *Beauveria bassiana* inhibited by, **393**
Thioquinox (see Quinoxaline-2,3-trithiocarbonate)
Thiram, in spray mixtures against orchard pests, **426**; against wireworms, **394**; effects of, on populations of *Panonychus ulmi*, **493**; *Nasonia vitripennis* unharmed by, **690**; seed treatments with mixtures of insecticides and, **66, 394, 428**; effects of storage on seed treated with, **428**
Thistle, Russian (see *Salsola kali tenuifolia*)
thomasi, *Capitophorus* (*Pentatrichopus*)
Thomsonisca typica, parasitic on *Aulacaspis rosae* in France, **130**
thoracalis, *Microtermes*
Thrips angusticeps, bionomics of, on flax in Holland, **291**; measures against, **291**
Thrips lini (*linarius*), bionomics of, on flax in Holland, **291**
Thrips nigropilosus (on pyrethrum), in Kenya, **436, 541**; in Tanganyika, **436**; other food-plants of, **436**; insecticides against, **436, 541**
Thrips tabaci, in Bulgaria, **188**; in California, **20, 495**; in Egypt, **30**; in Kenya, **436**; in Morocco, **113**; in Queensland, **390**; in Turkey, **479**; on cabbage, **390**; on cotton, **30, 113, 495**; on pyrethrum, **436**; on tobacco, **188, 479**; transmitting virus diseases, **20, 188**; insecticides against, **113, 188, 390, 436, 495**
thuiella, *Argyresthia*
Thuja, *Argyresthia thuiella* on, in Connecticut, **76**
Thuja occidentalis, *Phloeosinus armatus* feeding on, **59**
Thuja plicata, *Melanolophia imitata* on, in British Columbia, **223**
thujae, *Phloeosinus*
Thuricide, spore-preparation of *Bacillus thuringiensis* (*q.v.*), **15, 86, 94, 406, 659, 660, 690**
thuringiaca, *Anarthronota*
Thymelicus lineola, occurrence of, on grasses in Canada, **568**; parasites of, **568**
thymus, *Hyssopus*
Thyrinteina arnobia, bionomics of, on *Eucalyptus* in Brazil, **308**; tests and uses of insecticides against, **308**
Thysanus ater, parasitic on *Quadraspidiotus perniciosus* in Yugoslavia, **129**
Thysanus flavopalliatus, hyperparasite of *Lepidosaphes beckii* in Florida, **570**
Tilia (see Lime (*Tilia*))
tiliae, *Typhlodromus* (see *T. pyri*)
tiliaria, *Erannis*
tiliarum, *Typhlodromus*
Timber, insects in, in Britain, **173**; pests of, in France, **422**; oviposition by *Agrotis ipsilon* on, **593**; Coleoptera in, **12, 45, 52, 70, 89, 110, 138, 168, 171, 173, 233, 345, 373, 374, 375, 376, 377, 378, 431, 432, 467, 529, 538, 597, 622, 643, 683, 693, 694**; survey of data on attraction of Coleoptera to, **639**; monograph on Australasian Cerambycids infesting, **444**; determination of susceptibility of, to *Lyctus brunneus*, **641**; *Urocerus* spp. in, **12**; relation of Siricids to fungi destroying, **4**; termites attacking, **110, 643**; attractants for termites in, **494**; activity of chemical constituents of, against termites, **110**; surveys of data on insects infesting, **173, 639, 643**; treatments of, **12, 52, 110, 138, 168, 173, 233, 345, 374, 431, 432, 444, 639, 643, 683**; effects of impregnation of, on larval growth of *Hylotrupes bajulus*, **89**; timing of treatments of, **168** (See also Building Timber)
Timothy Grass (see *Phleum pratense*)
Tinea granella (see *Nemapogon*)
Tineola bisselliella, digestion of wool by, **516**; tests of antimetabolite for protection of woollen fabric against, **259**
Tiphia, species of, parasitising *Amphimallon majalis* in France, **194**; introduced into New York, **195**
Tipula paludosa, structure and permeability of cuticle of larvae of, **292**; iridescent virus of, **295, 572**
tipuliformis, *Aegeria* (*Synanthedon*)
Tiralin, containing Thiram and BHC (*q.v.*), **394**
tischeriae, *Pnigalio*
TMTD (see Thiram)
Toadflax (see *Linaria*)
Tobacco, *Heliothis virescens* on, in Argentina, **482**; viruses of, in Belgium, **207**; pests of, in Bulgaria, **188, 554**; pests of, in India, **414, 675**; *Phthorimaea operculella* on, in Queensland, **137**; *Thrips tabaci* on, in Turkey, **479**; pests of, in U.S.A., **12, 15, 81, 239, 258, 260, 262, 493, 649**; book on pests of, **238**; insects and virus diseases of, **188, 207, 649**; effects of virus disease of, on

feeding by *Myzus persicae*, **494**; effect of *M. persicae* on curing of, **81**; oviposition by *Agrotis ipsilon* on, **593**; insecticide residues on, **167, 266**; tainting of, by insecticides, **137**; toxicity of Telodrin to, **137**; decoction of, against *Aphis glycines*, **286**; (stored), *Lasioderma serricorne* in, **531** (See also Cigarettes)

Tobacco Hornworm (see *Protoparce sexta*)

Tomaspis flavopicta, insecticides against, on grasses in Brazil, **307**

Tomaspis humeralis (see *Deois schach*)

Tomato, pests of, in Australia, **137, 311**; *Phthorimaea operculella* on, in Bulgaria, **554**; pests of, in Italy, **677**; *Othreis fullonia* feeding on fruits of, in Samoa, **661**; pests of, in U.S.A., **20, 22, 23, 80, 162, 163, 239, 273, 349, 359, 360, 585, 649**; effects of *Lygus lineolaris* on yields of, **585**; assimilation of, by *Protoparce sexta*, **303**; insects in relation to infection of, by *Geotrichum candidum*, **349**; insects and virus diseases of, **20, 137, 138, 275, 649**; identity of virus disease of, **536**; insecticide residues on, **79, 80, 266, 359, 585, 677**

Tomato, Currant (see *Lycopersicum pimpinellifolium*)

Tomato Hornworm (see *Protoparce quinquemaculata*)

Tomicobia seitneri, predacious on *Ips subelongatus* in Mongolia and U.S.S.R., **254**

torpidus, Panscopus

torquatus, Xyleborus

Tortricid, Apple (see *Cydia pomonella*)

tortricis, Phorocera

Tortrix capensana, on fruits and other plants in S. Africa, **112**; parasites of, **112**

Tortrix postvittana (see *Epiphyas*)

Tortrix viridana (on oak), in Britain, **385, 464**; in Czechoslovakia, **68**; in Portugal, **464**; phenological resistance of oaks to, **385**; effects of defoliation by, on timber increment, **464**; egg production by, **68**; use of systemic insecticides in estimation of larval populations of, **385**; delayed bud development as measure against, **300**

Tortrix, Orange (see *Argyrotaenia citrana*)

Torymus, species of, parasitising *Contarinia oregonensis* in U.S.A., **80**

Torymus macropterus, hosts of, in Bulgaria, **322**

Toxaphene, against aphids, **21, 30, 530**; *Macrosiphum pisum* favoured by, **140**; against other Hemiptera, **30, 34, 50, 140, 503**; against Coleoptera, **86, 166, 191, 246, 335, 369, 380, 458, 476, 497, 520, 680**; susceptibility or resistance to, in strains of *Anthonomus grandis*, **159**; against Diptera, **21, 111, 152, 335, 550, 611, 687**; resistance to, in strain of *Dacus cucurbitae*, **611**; against Noctuids, **6, 21, 30, 34, 87, 165, 256, 414, 647**; susceptibility or resistance to, in strains of *Heliothis zea*, **579**; against other Lepidotera, **34, 308, 359, 489, 529**; low toxicity of, to larvae of *Dioryctria abietivorella*, **86**; susceptibility or resistance to, in strains of *Blattella germanica*, **300**; against locusts **296, 528, 621**; against thrips, **12, 13**; effects of, on populations of *Tetranychus telarius*, **670**; bees unharmed by, **191, 246**; effects of on other beneficial insects, **30, 140**; comparative toxicity of, to arthropods, **155**; development of *Beauveria bassiana* unaffected by **393**; in dusts, **86, 87, 191, 246, 335, 359, 550, 670**; in sprays, **12, 13, 21, 30, 34, 50, 86, 87, 140, 165, 166, 191, 246, 296, 335, 359, 458, 476, 489, 497, 503, 520, 529, 550, 621, 647, 670, 680, 687**; in bait-sprays, **111**; applied from aircraft, **335, 687**; applied with herbicide treatment for cotton, **13**; soil treatment with, **256, 369**; residues of, in milk, **454, 489**; residues of, on plants, **489, 496**; tobacco leaves tainted by, **137**; bioassay of residues of, in soil, **369**; and DDT, **12, 13, 86, 159, 579**; and parathion, **21, 503**; and polyhedrosis virus, **6**; and Shell SD-3562, **13**; synergism of other insecticides with, **370**

Toxoptera aurantii (on *Citrus*), in India, **176**; in Formosa, **612**; in U.S.A., **176**; transmitting tristeza virus, **176, 612**; fluctuations in populations of, **612**; traps for, **612**; sprays against, **612**

Toxoptera citricidus (on *Citrus*), in Formosa, **612**; in Dutch Guiana, **438**; in India, **176**; in Malaya, **314**; absent from U.S.A., **176**; transmitting tristeza virus, **176, 314, 612**; flight habits of, **438**; fluctuations in populations of, **612**; traps for, **612**; sprays against, **612**

Toxoptera graminum (on cereals and grasses), in Manitoba, **660**; in U.S.A., **268, 269, 351, 652, 693**; varietal susceptibility of cereals to, **269, 271**; and virus diseases of cereals, **351, 652, 693**; effects of temperature on fecundity of, **269**; effects of plastic cage materials on, **161**; ants associated with, **693**; sprays against, **351**

Toxoptera odinae, on *Citrus* in Formosa, **612**
Trachea atriplicis, effects of crowding on larvae of, **672**
Trachyostus aterrimus, in W. Africa and Congo basin, **376**; bionomics and habits of, infesting felled trees, **376**; natural enemies of, **376**
Trachyostus ghanaensis, on forest trees in Ghana, **373, 538**; behavioural phases of, **373**
Trachys pacifica, on jute in E. Pakistan, **622**
Tragocephala, identity of egg-parasite of, **118**
Tragocephala bassamensis, on cacao in Nigeria, **119**
Tragocephala castnia, in Ghana, **116, 119**; on cacao, **116**; favoured by dieldrin, **116**
Tragocephala gorilla, on cacao in Nigeria, **119**; other food-plants of, **119**; bionomics and natural enemies of, **119**
transitella, *Paramyelois* (*Myelois*)
transversa, *Eupsilia*
Trapa bispinosa, pests of, in India, **414**
trapezalis, *Marasmia*
trapezina, *Cosmia* (*Calymnia*)
Traps, for aphids, **204, 426, 438, 612**; for bark-beetles, **69, 354, 463, 465**; for other Coleoptera, **462, 498, 557, 598, 647, 664**; experiments with cotton extracts in, for *Anthonomus grandis*, **97**; for Diptera, **145, 637, 686**; for Lepidoptera, **657, 681**; for earwigs, **165**; for sawflies, **201, 563**; use of female sex attractant in, **681**; use of, in high-altitude studies of insects, **437**; wind speed in relation to efficiency of, **384**; types of, **108, 354, 383, 469, 637** (See also Adhesive Traps and Light-traps)
Trap-trenches, for control of *Cleonus punctiventris*, **430**
Trathala flavoorbitalis (see *Cremastus*)
Trefoil, Birdsfoot (see *Lotus corniculatus*)
tremblayi, *Trioza*
Trembling Aspen (see *Populus tremuloides*)
Trialeurodes, food-plants of species of, in U.S.A., **575**
Trialeurodes abutilonea, food-plants of, in U.S.A., **575**; as vector of sweet-potato virus, **575**
Trialeurodes floridensis, **575**
Trialeurodes lubia sp. n., on cotton and other plants in Sudan, **105**; bionomics of, **105**; characters distinguishing, **105**
Trialeurodes notata, **575**
Trialeurodes packardi, **575**
Trialeurodes vaporariorum, in Ontario, **505**; food-plants of, in U.S.A., **575**; transmitting *Xanthomonas pelargonii* to geraniums, **648**; parasite of, **505**
triangularis, *Bracon*
triangulifera, *Goniozus*
triangulifera, *Doddiana* (see *D. mellea*)
Triaspis obscurellus, parasitising *Apion carduorum* in France, **338**
Tribolium, in pit-stored sorghum in Sudan, **29**; protection of baby food against species of, **232**
Tribolium castaneum, in W. Africa, **673**; in India, **530, 673**; in Jamaica, **398**; in Kenya, **462**; in Texas, **11**; in Trinidad, **696**; in stored cacao, **696**; in stored cereals, **11, 161, 273, 462, 530, 539**; in flour, **466, 673**; in stored groundnuts, **673**; infesting meat extract, **232**; factors affecting development and dispersion of, **356, 466, 539**; metabolic rate of, **449**; predator of, **530**; trap for, **462**; effects of X-rays on stages of, **534**; tests and uses of insecticides against, **11, 12, 161, 382, 398, 437, 501, 673, 696**; mode of action of inert dusts on, **232**; factors affecting toxicity of pyrethrums to, **292**; other measures against, **232, 273, 674, 696**
Tribolium confusum, in Egypt, **503**; in U.S.A., **13**; baits for rodents damaged by, **21**; in stored cereals, **13, 85, 161, 462, 499**; in flour, **503**; influence of climate on infestation of flour mills by, **466**; metabolic rate of, **449**; trap ineffective for, **462**; effects of electrical treatment of stored wheat on, **240**; effects of X-rays on stages of, **534**; effects of anticoagulants on, **21**; tests of antimetabolite for protection of foodstuffs against, **259**; insecticides against, **21, 85, 161, 167, 382, 499, 503**; factors affecting susceptibility of, to insecticides, **13**; used in tests of insecticides, **8, 521, 697**
Tribolium destructor, influence of diet on growth of, **396**
Tribolium madens, bionomics of, infesting stored products in Britain, Canada, Germany, Portugal and Yugoslavia, **468**
Tribulus terrestris, *Microlarinus* spp. on, in India, **456**; *Microlarinus* spp. introduced into U.S.A., for control of, **456, 495**
Trichiocampus irregularis, strain of *Bacillus cereus* isolated from, **659**
Trichispa sericea, on rice in Madagascar, **441**; insecticides against, **441**

Trichloroethane, soil fumigation with mixture containing, against *Pylloxera vitifoliae*, **253**
N-Trichloromethylthiophthalimide, tolerated by predacious mites, **491**
Trichlorphon, against Coleoptera, **85, 295, 380, 548**; against Trypetids, **111, 128, 197, 299, 646**; against other Diptera, **145, 343, 345, 459, 476, 605, 698**; of little value against *Melanagromyza phaseoli*, **29**; against Hemiptera, **35, 124, 391, 476, 585, 622**; ineffective against *Distantiella theobroma*, **117**; against Noctuids, **85, 118, 263, 323, 628**; against other Lepidoptera, **151, 247, 308, 390, 489, 526, 548, 655**; hatching of eggs of *Ostrinia nubilalis* inhibited by, **82**; ineffective against *Locusta migratoria*, **621**; against *Monomorium pharaonis*, **334**; unsatisfactory against *Tetranychus*, **287**; toxicity of, to bees, **323**; toxicity of, to other beneficial insects, **104, 497**; comparative toxicity of, to arthropods, **155**; metabolism of, **489**; in baits, **145, 526**; in bait-sprays, **111, 646**; in dusts, **197, 263**; in granules, **655**; in sprays, **29, 35, 85, 118, 124, 128, 151, 197, 247, 287, 299, 308, 323, 334, 343, 390, 391, 459, 476, 489, 497, 526, 548, 621, 628, 646, 698**; applied from aircraft, **655**; adhesive bands treated with, **295**; soil treatment with, **605, 698**; residues of, on vegetables, **585**; and DDT, **85, 343, 628**
Trichocerota constricta, bionomics of, on rose in Japan, **348**
trichodactyla, Hylemya (*Chortophila*)
Trichogramma (egg-parasites of Lepidoptera), release of species of, in Louisiana, **153**; in Nova Scotia, **225**; in Yugoslavia, **128**; taxonomy and nomenclature of, **235**
Trichogramma australicum, egg-parasite of *Proceras sacchariphagus* in Madagascar, **514**; reared on *Corcyra cephalonica*, **514**
Trichogramma cacoeciae (parasitising *Cydia pomonella*), in Germany, **628**; reared on *Anagasta kuehniella*, **338**
Trichogramma cacoeciae pini, egg-parasite of *Bupalus piniarius* in U.S.S.R., **71**
Trichogramma embryophagum, parasitising eggs of Lepidoptera, **6, 533**; host selection by, **533**; *T. cacoeciae* considered as variety of, **338**
Trichogramma fasciatum, **153**
Trichogramma minutum (egg-parasite of Lepidoptera), in Grenada, **279**; in U.S.A., **490, 506**
Trichogramma pretiosum, egg-parasite of *Ceramidia butleri* in Costa Rica, **492**
Trichogramma semifumatum, egg-parasite of *Colias eurytheme* in California, **497**; toxicity of sprays to, **497**
Tricholaba barnesi, on clovers in Britain, **633**
Trichomalus gynetelus, parasitising *Apion carduorum* in France, **338**
Trichomma enecator, parasitising *Cydia pomonella* in Rumania, **319**
Trichoplusia ni (in U.S.A.), on cotton, **87**; on crucifers, **6, 454**; on tomato, **360**; bionomics and adult habits of, **307**; method of rearing, **406**; artificial diet for, **576, 586**; diseases of, **6, 360, 404, 702**; light-trap catches of, **87, 307**; insecticides against, **6, 454**
trifasciata, Analeptes
trifasciatus, Closterocerus
trifolii, Apion; *Liriomyza*
Trifolium, Macrosteles fascifrons transmitting aster-yellows virus to species of, in California, **649**
Trifolium alexandrinum, Prodenia litura on, in Egypt, **31**
Trifolium fragiferum, infected by aster-yellows virus in California, **649**
Trifolium medium, Apion trifolii on, in Finland, **641**
Trifolium pratense, Ceci'omyiids in flowers of, in Britain, **633**; *Macrosiphum pisum* on, in Czechoslovakia, **633**; Coleoptera on, in Finland, **470, 641**; efficiency of bees as pollinators of, in New Zealand, **179**; *Lygus* spp. on, in Poland, **252**; *Adelphocoris lineolatus* on, in Saskatchewan, **599**; pests of, in U.S.A., **7, 370, 498, 584**; as supplementary food of *Aphytis proclia*, **72**; experiments on transmission of mosaic viruses to, by aphids, **7**; insecticide residues on, **95, 267**
Trifolium repens, Dasyneura gentneri in flowers of, in Britain, **633**; injurious fungi isolated from *Sitona* spp. on, in New Hampshire, **351**; pollination of, by bees in New Zealand, **445**; Hemiptera transmitting viruses of, **536, 654**
Trifolium repens latum, pests of, in Massachusetts, **19**, insecticide residues on, **19, 95**
Trigona corvina, as vector of bacterial wilt of banana in Honduras, **409**
Trigonura, species of, parasitic on *Magdalis* in Quebec, **4**
trilineata, Lema
trilineatum, Aphanotrigonum
trimaculata, Phaonia
Trimerotropis pallidipennis pallidipennis, bionomics of, in Arizona, **584**

Trimethoate (see O,O-Diethyl S-Isopropylcarbamoylmethyl Phosphorodithioate)
Trinidad, *Selenothrips rubrocinctus* on cashew and other plants in, **122**; relation of *Rhynchophorus palmarum* to nematode causing red-ring disease of coconut in, **212, 499**; *Aeneolamia varia saccharina* on pangola grass and sugarcane in, **409, 459**; insects infesting stored cacao in, **696**; rearing of Javanese parasites of *Proceras sacchariphagus* in, **277**
Trioxys, parasitising *Aphis pomi* in Bulgaria, **322**
Trioxys pallidus (parasitising aphids), establishment of, in California, **151, 306**; bionomics and parasites of, **151**; considered distinct from *T. utilis*, **306**
Trioxys utilis (parasitising aphids), in California, **88, 306**; toxicity of insecticides to, **88**; considered distinct from *T. pallidus*, **306**
Trioza brassicae, bionomics of, on vegetables in Bulgaria, **190**; parathion sprays against, **190**
Trioza erytreae, on *Citrus* in Kenya and Eritrea, **230**; parasite of, **230**
Trioza nigricornis, characters distinguishing *T. tremblayi* from **544**
Trioza tremblayi sp. n., on onion in Italy, **544**; characters distinguishing *T. nigricornis* from, **544**
Triozastus propatulus, infesting timber in Ghana, **378**
Triphaena pronuba, bionomics of, damaging vegetables in Britain, **438**
Triplochiton scleroxylon, *Trachyostus ghanaensis* on, in Ghana, **373**; Coleoptera infesting logs of, **374**; treatment of plywood manufactured from, **233**
Tripsacum laxum, pests and diseases of, in Ceylon, **126**
tripunctata, *Drosophila*
Tris(1-aziridinyl)phosphine Oxide, tests of, as chemosterilant: for Trypetids, **94**; for *Panonychus citri*, **269**
Trisetacus grosmanni, associated with *Lygus rubricatus* on spruce in Germany, **464**
tristicolor, *Orius*
tristis, *Ambeodontus*; *Anasa*; *Biolysia*
tristriatus erineus, *Eriophyes* (see *Aceria erinea*)
Trithion, against Diptera, **76, 77, 93, 605**; against Hemiptera, **14, 24, 163, 262**; resistance to, in strains of *Erythroneura variabilis*, **24**; against *Fenusa pusilla*, **76**; against Lepidoptera, **14, 76, 87, 308**; against grasshoppers, **148**; against mites, **9, 166, 290, 308, 309, 371, 552, 635**; resistance to, in strains of *Panonychus ulmi*, **656**; beneficial mites unharmed by, **2**; in dusts, **24, 262, 371**; in granules, **605**; in sprays, **14, 24, 76, 77, 87, 148, 163, 166, 290, 308, 309, 552**; seed treatment with, **605**; soil treatment with, **605**; and Sevin, **24**
tritici, *Contarinia*; *Frankliniella*
Triticum, factors affecting resistance of varieties and species of, to *Cephus cinctus*, **213, 214** (See also Wheat)
Tritneptis klugii, parasitising *Pristiphora abietina* in Germany, **336**
Triton X-100, **616**
trochanterata, *Oscinella*
Trochilium apiforme (on poplar), bionomics of, in Austria, **293**; in France, **206, 701**; in Germany, **701**
trogocarpi, *Decatoma*
Trogoderma, crossbreeding tests with species of, **6**
Trogoderma glabrum, in California, **6**; sterility of hybrids of *T. granarium* and, **6**
Trogoderma granarium (in stored foodstuffs), in W. Africa, **673**; in Britain, **388**; in California, **6**; in India, **620**; introduced into Italy, **466**; in Sudan, **29**; in Turkey, **337, 466**; susceptibility of raw and parboiled rice to, **620**; diapause in, **388**; factors affecting degree of infestation by, **29**; effects of γ-radiation on reproduction of, **337**; measures against, **527, 673**; sterility of hybrids of *T. glabrum* and, **6**
Trogoderma grassmani, in California, **6**
Trogoderma inclusum, in California, **6**; introduced into Italy from N. America, **466**; in stored wheat, **466**; attractiveness of milk products to, **268**
Trogoderma khapra (see *T. granarium*)
Trogoderma parabile (in stored wheat), in California, **6**; effects of electrical treatment on, **240**; inert dust against, **161**
Trogoderma simplex, in California, **6**
Trogoderma sternale, in California, **6**
Tropaeolum, aphids and virus disease of, in India, **528**
tropica, *Eulaema*
trouessarti, *Cheyletus*
Trox procerus, predacious on eggs of *Schistocerca gregaria* in India, **621**
truncatus, *Colopterus*; *Laemophloeus*; *Prostephanus*
tryoni, *Dacus* (*Strumeta*)
Trypodendron lineatum (on conifers), in British Columbia, **563**; in Czechoslovakia, **70, 251, 465**; in Germany, **432**; in Norway, **345**; factors affecting infestation of logs by, **465, 564**;

bacteria infecting, **252**; natural enemies of, **251, 252**; measures against, **252, 345, 432**
Tryporyza incertulas (on rice), in India, **49**; in Pakistan, **277, 278**; in Vietnam, **526**; bionomics and parasites of, **278**; susceptibility of larvae of, to *Isaria farinosa*, **226**; light-trap catches of, **526**; insecticides against, **49**
Tryporyza innotata, bionomics of, on rice in Pakistan, **277, 278**; parasites of, **278**
Trypsin, *Tineola* proteinase compared with, **516**
Tsuga canadensis, *Fiorinia externa* on, in New York, **96**
Tsuga heterophylla, pests of, in British Columbia, **223, 449, 506, 601**; systemic activity of phosphamidon in, **665**
TTC (see Neotran)
tuberculatis, *Aulacaspis*
tuberculatus, *Eumerus*
tuberculifera, *Elachiptera*
Tufted Vetch (see *Vicia cracca*)
Tulip, *Myzus persicae* on, **186**
tumidicostalis, *Chilo*
Tumidiscapus cercopiphagus, egg-parasite of *Aphrophora saratogensis* in N. America, **24**
Tung Nut (see *Aleurites fordii*)
Tung Oil, as adhesive in sprays, **88**
Tur (see *Cajanus cajan*)
turcicus, *Cryptolestes*
Turf (see Grasses)
turionana, *Rhyacionia* (*Evetria*)
turionellae, *Pimpla*
turionum, *Tetrastichus*
Turkey, pests of cereals in, **313, 314, 519**; pests of cotton in, **35**; *Anthonomus piri* on pear in, **35**; *Polydrusus cervinus* on soft fruits in, **36**; *Thrips tabaci* on tobacco in, **479**; insects infesting cones of cedar of Lebanon in, **430**; *Trogoderma granarium* in stored cereals in, **337, 466**; work on pests of crop plants in, **50**; list of Thysanoptera in, **479**
Turnip, *Listroderes costirostris obliquus* on, in Australia, **311**; pests of, in Britain, **211, 302**; *Hylemya brassicae* on, in France, **422**; pests of, in Germany, **626, 683**; *H. brassicae* on, in New Brunswick, **281**; aphids on, in New Zealand, **180, 181, 445**; experiments with aphids and brassica viruses on, **124**; varietal susceptibility of, to *H. brassicae*, **281**; development of *Myzus persicae* on, **302**; factors affecting infestation of, by *Forcipomyia ciliata*, **683**; used in experiments on food-plant selection by *Brevicoryne brassicae*, **533**; seed treatment of, **422**; insecticide residues on, **361, 585** (See also *Brassica campestris*)
Turnip Rape, pests of, in Germany, **687**
Tydeus interruptus, in stored wheat in Saskatchewan, **221**
Tylomyza pinguis (on chicory), in Belgium, **52**; measures against, **52, 234**
Typha angustata, *Sesamia inferens* on, in Pakistan, **277, 278**
Typha angustifolia, *Elachiptera cornuta* on, in U.S.S.R., **254**
Typha latifolia, *Elachiptera cornuta* on, in U.S.S.R., **254**
Typhlocyba, key to related genera and, **43**
Typhlocyba rosae, on fruit trees in British Columbia, **596**; polybutene sprays against, **596**
Typhlodromus, predacious on *Eriophyes vitis* in Israel, **296**
Typhlodromus aberrans, predacious on Tetranychoid mites in Austria, **65**
Typhlodromus baccettii sp. n., predacious on Coccids in Italy, **328**
Typhlodromus cucumeris, predacious on Tetranychoid mites in Austria, **65**
Typhlodromus fallacis, attacking Tetranychids, **490**; effects of low temperatures on, **600**; resistance to acaricides in strains of, **490**
Typhlodromus finlandicus (predacious on pests of fruit trees), in Austria, **65**; in Germany, **624**; effects of low temperatures on, **600**; destroyed by other arthropods, **624**
Typhlodromus longipilus, destroying *Tetranychus telarius* in Holland, **42**; effects of acaricides on, **42**
Typhlodromus pyri (predacious on other mites), in Austria, **65**; in Germany, **626, 625, 690**; in Holland, **625, 690**; in Nova Scotia, **142, 143, 511**; bionomics of, **65, 142**; factors affecting oviposition by, **143, 690**; effects of low temperatures on, **600**; natural enemies of, **142, 624, 690**; characters of, **625**; not breeding with *T. setubali*, **625**
Typhlodromus rhenanus, predacious on *Panonychus ulmi* in Quebec, **2**; effects of low temperatures on, **600**; effects of acaricides on populations of, **2**
Typhlodromus setubali sp. n., on cork oak in Portugal, **625**; on fruit trees and vines in Spain, **625**; not breeding with *T. pyri*, **625**
Typhlodromus soleiger, predacious on mites in Austria, **65**
Typhlodromus tiliae (see *T. pyri*)
Typhlodromus tiliarum (predacious on Tetranychids), in Austria, **65**; in Holland, **690**; effects of sprays on egg production by, **690**

Typhlodromus vitis (see *T. aberrans*)
typica, Thomsonisca
typographus, Ips
Tyroglyphus farinae (see *Acarus siro*)
Tyrophagus dimidiatus, auct. (see *T. longior*)
Tyrophagus lintneri (see *T. putrescentiae*)
Tyrophagus longior, bionomics of, in stored foodstuffs in Japan, **411**; diet for, **411**; detection of, **412**
Tyrophagus noxius (see *T. putrescentiae*)
Tyrophagus perniciosus, in stored products in Poland, **184**
Tyrophagus putrescentiae, infesting mushroom-spawn cultures in California, **453**; in stored products in Poland, **184**; food preferences of, **184**; factors limiting populations of, **184**; predators of, **282, 449**; measures against, **453**; used in tests of acaricides, **155**

U

UC-8305 (see P-Chloro-2,4-dioxa-5-methyl-P-thiono-3-phosphabicyclo-[4.4.0]decane)
UC-10854 (see m-Isopropylphenyl Methylcarbamate)
Uganda, mites on cotton in, **534**; *Cryptolestes turcicus* imported into, in wheat from U.S.A., **126**
uliginosa, Sarcophaga (*Parasarcophaga*)
ulmi, Haltica (*Altica*); *Panonychis* (*Metatetranychus*)
Ulmus americana, Eulecanium coryli on, in Saskatchewan, **507**
Ultraviolet Light, effects of, on *Acrobasis vaccinii*, **18**; recovery of marked *Anthonomus grandis* by use of, **167**; in traps for Coleoptera, **374**; in traps for Lepidoptera, **66, 87, 307, 359, 472, 586, 657, 658**; of little effect on virulence of entomogenous fungi, **522**; effects of, on insecticides, **8, 436**
Umbonia crassicornis, on fruit trees and ornamental plants in Florida, **272**
Unaspis citri, map of distribution of, **212**
undalis, Hellula
undatus, Coraebus
undecimpunctata, Coccinella; *Diabrotica*
undulata, Phyllotreta
undulatus, Enoclerus; *Thanasimus*
unicolor, Bruchidius; *Colopterus* (*Colastus*)
Union Carbide (see UC)
Union of Socialist Soviet Republics, cereal pests in, **40, 182, 254, 255, 256, 297, 313, 317, 523**; diseases of cereals in, **256, 317**; pests of grasses in, **74, 135, 297, 523**; *Citrus* pests in, **124, 297**; pests of other fruit trees in, **72, 73, 133, 134, 135, 136, 458, 643**; insects on pistachio in, **40**; pests of vines in, **134, 253, 254**; *Ostrinia nubilalis* on hemp, tea, etc. in, **40, 297**; pests of vegetables in, **317, 643**; forest pests in, **70, 71, 72, 73, 74, 75, 254, 255, 256, 458, 643**; *Melolontha hippocastani* in, **107**; termites in, **398**; natural enemies of pests in, **41, 71, 72, 73, 74, 75, 133, 134, 135, 136, 182, 254, 255, 523**; booklet on Cecidomyiids of, **458**; survey of data on Coccids in, **643**; monograph on distribution and bionomics of flea-beetles of, **515**
unionalis, Margaronia (*Glyphodes*)
unipuncta (Haw.), *Pseudaletia*
unipuncta, auct., *Pseudaletia* (*Cirphis*) (in Japan and Vietnam) (see *P. separata*)
United States of America, *Citrus* pests in, **124, 125, 176**; pests and diseases of other fruit trees in, **350, 485, 486**; *Capitophorus fragaefolii* transmitting strawberry viruses in, **586**; cotton pests in, **305, 504**; maize pests in, **83, 84, 125, 290**; pests of other cereals in, **126, 152, 505, 651**; pests of pastures in, **521, 651**; pests of leguminous forage plants in, **148, 274, 275, 352, 500, 588**; *Megachile rotundata* pollinating lucerne in, **23**; pests of vegetables in, **91, 92, 152, 163, 268, 305, 364, 575, 652**; virus diseases of vegetables in, **364, 386, 575, 652**; forest pests in, **10, 24, 25, 77, 80, 84, 87, 91, 97, 223, 270, 279, 292, 346, 354, 452, 456, 488, 492, 509, 566, 595, 702**; pests of ornamental plants in, **51, 152, 163, 536, 652**; *Myzus persicae* on *Nicotiana gossei* in, **357**; *Galleria mellonella* damaging honey-combs in, **588, 589**; pests of stored products in, **173, 699, 700**; *Hyphantria cunea* introduced into Europe from, **133**; migration of *Macrosteles fascifrons* in, **152**; *Popillia japonica* in, **104, 369, 486**; termites in, **702**; foodplants of *Trialeurodes* spp. in, **575**; keys to larvae of species of Olethreutidae and Tortricinae in, **701**; other pests in, **371, 493**; beneficial insects in, **24, 51, 84, 125, 309, 328, 456, 639**; *Microlarinus* spp. introduced into, for control of *Tribulus terrestris*, **496**; virus diseases of other plants in, **536, 651**; diseases of insects in, **148, 457**; textbook on economic entomology in, **178**; plant pests intercepted in, **639**; quarantine measures in, **106, 492**; contamination of water with insecticides in, **208**; tolerance limits for insecticides in, **16, 467, 556** (See also under individual States)

ununguis, Oligonychus
Urine, detection of dieldrin metabolites in, **44**
Urocerus, species of, on conifers in Minnesota, **12**
urozonus, Eupelmus
urticae, Tetranychus (see *T. telarius*)
Uruguay, parasites of *Listroderes costirostris obliquus* introduced into Australia from, **321**
urussovii, Monochamus
Utah, earwigs in, **165, 261**; *Microlarinus* spp. introduced into, for control of *Tribulus terrestris*, **496**
utahensis, Cephalonomia
utilis, Stethorus; *Trioxys*

V

vaccinii, Acrobasis
vacua, Dexia (*Dexilla*)
Vacuum Fumigation, **301**
Vacuum Vessels, tre tment of strawberry plants in, against mites, **164**
Valeriana officinalis (Valerian), *Alophus kaufmanni* on, in Bulgaria, **187**
n-Valeryl 1,3-Indandione, toxicity of, to *Alphitobius laevigatus*, **170, 171**
Valgus hemipterus, bionomics of, on fruit trees in Bulgaria, **322**
validirostris, Pissodes
validus, Sosylus
d-Valine, effects of, in diet for *Javesella pellucida*, **63**
n-Valone (see n-Valeryl 1,3-Indandione)
Vamidothion (see O,O-Dimethyl S-2-(1-Methylcarbamoylethylthio)ethyl Phosphorothioate)
vandenboschi, Opius
Vanessa cardui, on soy bean in Italy, **171**
vaporariorum, Trialeurodes
varia, Aeneolamia
variabilis, Erythroneura; *Hypera*
variana (Fern.), *Acleris*
variana, auct., *Acleris* (see *A. gloverana*)
variegana, Argyroploce (*Olethreutes*)
varipes, Dolichothrips; *Omphale*
varivestis, Epilachna
Varsol 3139, soil treatment with mixture of nicotine and, against *Rhagoletis pomonella*, **168**; toxicity of, to grass, **168**
varuna, Rapala
Vasates (see *Aculus*)
vassilievi, Asolcus (*Microphanurus*)
vastatrix, Phylloxera (see *P. vitifoliae*)
V-C 13 (and VC-13 Nemacide) (see O,O-Diethyl O-2,4-Dichlorophenyl Phosphorothioate)
vectiferella, Enosima (*Maliarpha*) (see *M. separatella*)
velox, Meloboris
velutinana, Argyrotaenia
Venezuela, bacterial wilt of banana in, **409**; cotton pests in, **297, 607**; new pest of grasses in, **606**; *Spodoptera frugiperda* on maize in, **605**; pests of sugar-cane in, **284, 606**; locusts and grasshoppers in, **296, 639**; forms of *Cadra cautella* in stored cacao in, **638**; beneficial insects in, **284, 606, 607**
venilialis, Marasmia
venosatus, Proceras
Venturia inaequalis, effects of sprays against, on populations of *Eriophyes pyri*, **448**
verbasci, Anthrenus
Verbascum thapsus, Euschistus servus in relation to, in Arkansas, **273**; experiments with *Protoparce sexta* on, **303**
verditer, Amblymerus
Vermiculite, in baits for fire ants, **264**; use of, in rearing *Hylemya brassicae*, **219**
Vermont, apple pests in, **655**; *Operophtera bruceata* on broad-leaved trees in, **569**
vernata, Paleacrita
versicolor, Agonoscelis (see *A. pubescens*); *Meteorus*
vespertinus, Conoderus
vesuviana, Carpomyia
Vetch (see *Vicia*)
Vetch, Hairy (see *Vicia villosa*)
Vetch, Tufted (see *Vicia cracca*)
Vicia, Sitona spp. on, in Czechoslovakia, **69**
Vicia cracca, Cydia nigricana on, in Finland, **64**; *Haltica corni* on, in Ontario, **586**
Vicia faba (see Beans, Broad)
Vicia villosa, Bruchus brachialis on, in Texas, **97**
viciae, Megoura
vicina, Calliphora; *Sturmia* (*Drino*)
Victoria, *Steneotarsonemus* spp. on greenhouse plants and strawberry in, **309**; pests of vegetables in, **310, 311**; *Cardiaspina albitextura* on *Eucalyptus* in, **608**; outbreaks of *Chortoicetes terminifera* in, **313**; *Teleogryllus commodus* in, **443**
viennensis, Tetranychus (*Amphitetranychus*)
Vietnam, pests of fruits and crops in, **526**
vigintiquatuorpunctata, Subcoccinella
Vikane Fumigant (see Sulphuryl Fluoride)
villiger, Mesomorphus
Vinca rosea, transmission of *Delphinium* yellows to, by dodder, **536**

Vine, Grape, pests of, in Australia, **106, 182, 461**; mites on, in Austria, **65, 472**; pests of, in Bulgaria, **187, 676**; *Phylloxera vitifoliae* on, in China, **286**; *Prodenia litura* on, in Egypt, **31**; pests of, in France, **290, 298, 548, 635, 681**; *Eriophyes vitis* on, in Israel, **296**; pests of, in Italy, **542, 543, 678**; *Phylloxera vitifoliae* on, in Ontario, **98**; *Tetranychus telarius* on, in Rumania, **319**; *Typhlodromus setubali* found on, in Spain, **625**; *Argyrotaenia pulchellana* on, in Switzerland, **40**; pests of, in U.S.S.R., **134, 136, 253**; pests of, in U.S.A., **24, 78, 82, 266, 577**; *Celerio lineata livornica* on, in Yugoslavia, **194**; relation of age of, to infestation by *P. vitifoliae*, **254**; virus diseases of, **548, 635**; tests of polybutenes on, **210**; absorption and translocation of systemic insecticides in, **182**; insecticide residues on, **83, 320, 577**; effects of insecticides on, **182, 253, 290**

Vinegar, use of, against larvae of *Galleria mellonella* in honey-combs, **589**

Vinyl, toxicity of, to barley and aphids, **161**; protection of litchi fruits with bags of, **526**

Viola (see also Pansy)

Viola cornuta, mites on, in Sweden, **560**

Viola odorata (Violet), *Myzus ascalonicus* on, in Austria, **67**

violae, *Steneotarsonemus*

violescens, *Didymuria*

virescens, *Heliothis*; *Phosphorus*

virgata, *Ferrisia* (*Ferrisiana*)

virgatus, *Parabates*

virgaureana, *Cnephasia*

virgifera, *Diabrotica*

Virginia, *Diabrotica undecimpunctata howardi* on groundnuts in, **260**; *Panonychus* sp. on raspberry in, **19, 20**; *Epitrix hirtipennis* on tobacco in, **152**

Virginia, West, forest pests in, **154, 166**; parasites of *Rhyacionia buoliana* in, **166**

virginianiae, *Contarinia*

virginicus, *Reticulitermes*

viridana, *Tortrix*

viridescens, *Meligethes*

viridis, *Ceramidia*; *Chermes* (*Sacchiphantes*); *Dichromorpha*

viridula, *Nezara*; *Sympiesis*

Viruses or Virus Diseases (of insects), in Coleoptera, **702**; in Lepidoptera, **6, 31, 36, 57, 78, 204, 295, 348, 401, 403, 404, 405, 407, 549, 550, 565, 657, 666, 679, 688, 692, 702**; effects of outbreak phase on susceptibility of larvae of *Lymantria dispar* to, **36**; in sawflies, **220, 663, 684**; in *Tipula paludosa*, **295**; in *Panonychus citri*, **692**; laboratory experiments with, **295, 549**; field use of, **6, 78, 220, 550, 566, 692**; pathology of, **295, 405**; transmission of, **403**; multiplication of, in pupae, **204**; persistence of virulence of, **549**; activation of, by Protozoa, **407**; thermal inactivation of, **692**; survival of, **402**; preservation of, in tablets, **235**; chemical composition and particle weight of, **572**; integrated use of bacteria or insecticides with, **6, 552**; review of factors affecting use of, **177**

Viruses or Virus Diseases (of plants*), relation of aphids to, **7, 11, 13, 57, 58, 60, 61, 62, 63, 79, 118, 124, 137, 140, 176, 179, 180, 207, 209, 242, 275, 314, 343, 347, 349, 350, 351, 356, 364, 385, 386, 395, 396, 397, 400, 401, 426, 428, 459, 494, 528, 535, 538, 563, 573, 574, 586, 612, 647, 649, 650, 651, 652, 654, 685, 693**; effects of, on food-plant selection by *Myzus persicae*, **494**; methods for study of aphids in relation to, **573, 574**; aphid transmission of, inhibited by electrostatic charge, **574**; relation of Cicadellids to, **17, 69, 98, 126, 152, 163, 203, 256, 275, 350, 535, 548, 635, 649, 650, 651. 652, 653**; relation of Delphacids to, **64, 95, 233, 291, 471, 513, 563**; other Hemiptera in relation to, **114, 115, 118, 649, 650**; relation of Thysanoptera to, **20, 188, 275**; transmission of, by mites, **2, 13, 275, 342**; reviews of transmission of, by arthropods, **177, 276, 285**; transmitted by dodder, **536**; varietal susceptibility of plants to, **140, 397, 513, 650, 651**; relation of fungus to, **115**; incubation periods of strains of, **652**; speed of infection by, **397**; other laboratory experiments with, **342**; pathogenicity of, to vectors, **275, 295**; survey of, in Bulgaria, **40**; survey of, on *Citrus* in Johore, **314**; vectors of, in Tanganyika, **540**; nomenclature and classification of, **276**; measures against, **276, 574**

visci, *Carulaspis*

Viscum album, *Carulaspis visci* on, in Italy, **328**

Vitamins, influence of, on diapause in *Leptinotarsa decemlineata*, **644**; in diets for insects, **439, 498, 532, 586**

viteana, *Paralobesia*

viticola, *Diaspidiotus*

vitifoliae, *Phylloxera*

* These references are also indexed under the individual plants infected.

vitis, *Eotetranychus carpini*; *Eriophyes*; *Pulvinaria*; *Targionia*; *Typhlodromus* (see *T. aberrans*)
vitripennis, *Mormoniella*; *Nasonia* (*Mormoniella*); *Syrphus*
vittata, *Acalymma*
vittatum, *Phaulacridium*
vulgaris, *Asaphes*; *Chrysopa*
vulnerator, *Pristomerus*
vulpina, *Lichnanthe*
vulpinus, *Dermestes* (see *D. maculatus*)
vulvornata, *Epicampoptera*

W

wahlbomiana, auct., *Cnephasia* (see *C. virgaureana*)
Walnut, pests of, in Austria, **295, 632**; pests of, in California, **151, 306, 358, 657**; *Argyrotaenia pulchellana* on, in Switzerland, **40**; influence of, on egg production by *Hyphantria cunea*, **295**
walshii, *Myzocallis*
Warehouses, *Gibbium psylloides* in, **634**
Warfarin, effects of, on *Tribolium confusum* in baits for rodents, **21**
Washington, *Aculus schlechtendali* on apple in, **82**; *Tetranychus telarius* on peach in, **578**; *Psylla pyricola* and pear decline in, **485**; *Panscopus torpidus* on raspberry in, **22**; *Capitophorus fragaefolii* transmitting strawberry viruses in, **586**; aphids transmitting strains of barley virus in, **652**; aphids and mosaic viruses of beans and clovers in, **7**; lucerne pests in, **7**; *Macrosiphum pisum* on pea in, **267**; forest pests in, **80, 215, 219, 367, 516, 564**; *Merodon equestris* on narcissus in, **16**; parasite of *Chermes piceae* established in, **219**; *Microlarinus* spp. introduced into, for control of *Tribulus terrestris*, **496**
washingtonensis, *Contarinia*
Wasps, transmitting bacterial wilt of banana in Honduras, **409**
Water Mint (see *Mentha aquatica*)
Watermelon, *Aphis gossypii* on, in Brazil, **285**; *Myzus persicae* on, in Hawaii and continental U.S.A., **364**; transmission of virus diseases of, by aphids, **13, 364**; seed treatment of, **285**
watersi, *Diparopsis*; *Opius*
Webworm, Garden (see *Loxostege similalis*)
Weeds, in Australia, **444**; report on insects introduced into Canada for control of, **519**; effect of control of, on populations of *Psylloides chrysocephalus*, **66**; migration of *Oscinella frit* to cereals from, **425**; control of, as measure against grasshopper, **501** (See also under individual plants)
Weevil, Grain (see *Sitophilus granarius*)
Wepsyn (see 5-Amino-1-bis(dimethylamido)phosphoryl-3-phenyl-1,2,4-triazole)
Wesson's Salts, in diet for *Diatraea saccharalis*, **8**
West Indies, forms of *Cadra cautella* on stored cacao in, **638** (See also under individual countries)
Western Hemlock (see *Tsuga heterophylla*)
Western Red Cedar (see *Thuja plicata*)
Western White Pine (see *Pinus monticola*)
Weymouth Pine (see *Pinus strobus*)
Wheat, Cecidomyiids on, in Austria, **296**; Diptera on, in Britain, **245, 695**; pests of, in Bulgaria, **190, 323, 392, 416, 418, 478**; pests of, in Canada, **2, 213, 651, 659**; Delphacids on, in Finland, **64, 471**; Pentatomids on, in Greece, **321**; *Petrobia latens* on, in India, **415**; *Barytychius avulsus* on, in Italy, **173**; *Eurygaster integriceps* on, in Lebanon, **35**; pests of, in Persia, **127, 438**; *Atherigona parvipuncta* on, in S. Rhodesia, **125**; pests of, in Sweden, **561, 563**; *Rhopalosiphum padi* on, in Switzerland, **60**; pests of, in U.S.S.R., **182, 254, 256, 523**; pests of, in U.S.A., **91, 157, 166, 298, 516**; Pentatomids on, in Middle East, **35, 438, 519**; varietal susceptibility of, to insects, **213, 245, 269, 296, 439**; effects of nitrogenous fertilisers on infestation of, by *Mayetiola destructor*, **91**; effect of sowing date on infestation of, **392, 478**; Hemiptera and virus diseases of, **60, 64, 256, 471, 563**; varietal susceptibility of, to mosaic virus, **651**; chemical determination of damage by Pentatomids to, **321**; as food-plant of *Melanoplus bilituratus*, **511**; in baits for *Gryllotalpa*, **419**; use of, in rearing insects, **127, 222**; seeds of, used in food-selection tests with wireworms, **536**; seed treatment of, **60, 157, 262, 418**; systemic activity of phosphorus compounds in, **298**; factors affecting toxicity of insecticides to, **262**
Wheat (Stored), Coleoptera in, **13, 126, 161, 221, 240, 252, 346, 379, 381, 382, 466, 499, 501, 527, 539, 561, 622, 678, 687, 694**; relation of grain structure of, to oviposition by *Rhyzopertha dominica*, **120**; effects of, on mortality, fecundity and development of *Sitophilus* spp., **252, 253**; factors affecting dispersion of insects in, **382, 539, 561**; Lepidoptera

in, **379**; mites in, **221**; assessment of damage to, by insects, **378**; zonal deterioration of, **221**; fumigation of, **13, 346**; sorption of fumigants by, **13, 85, 92, 149**; residues of ethylene dibromide in, **149**; other treatments of, **161, 239, 499, 527, 678**; effects of γ-radiation on germination and growth of, **382**

Wheat, Bread (see *Triticum aestivum*)

Wheat Flakes, as bait for earwigs, **165**

Wheat Flour, in diet for *Tribolium destructor*, **396**

Wheat Germ, *Tyrophagus putrescentiae* infesting, **184**; in diets for insects, **8, 150**

Wheatfeed, development of Coleoptera on, **381, 468**

Willow (*Salix*), *Hyphantria cunea* on, in Austria, **295**; influence of, on egg production by *H. cunea*, **295**; *Rhabdophaga marginemtorquens* on species and hybrids of, in Britain, **701**; *Operophtera bruceata* on, in Canada, **569**; *Saperda carcharias* on, in Czechoslovakia, **250**; *Cryptorhynchus lapathi* on, in France, **245**; *C. lapathi* on, in Hungary, **57**; *Oberea oculata* on, in Yugoslavia, **54** (See also *Salix* spp.)

wilkinsoni, Podacanthus

Wind, influence of, on reactions of bark-beetles to sex attractants, **451**; effects of, on flight and dispersion of insects, **146, 175, 302, 410, 437, 472, 479, 529**; in relation to traps, **384, 469**

Wine, contamination of, by insects, **570**

Wireworms, in Bulgaria, **416**; in Canada, **262, 281, 448, 598**; in Morocco, **113**; in Scotland, **536**; in U.S.A., **260, 493**; in Yugoslavia, **394**; bionomics and seasonal behaviour of, **282**; food preferences of, **536**; types of soil in relation to, **282**; methods for study of, **598**; trap for, **598**; insecticides against, **113, 260, 262, 394, 416, 493**; resistance to insecticides in strains of, **260, 503**; (*Agriotes*), key to larvae of, **459**

Wisconsin, Lepidoptera on apple in, **15, 43, 86, 593**; *Spilonota ocellana* on cherry in, **158**; aphids transmitting yellow dwarf virus of barley in, **350**; aphids and cabbage viruses in, **79**; *Empoasca fabae* on lucerne in, **162**; forest pests in, **4, 24, 261, 368, 490, 569, 639, 702**; insect vectors of fungal diseases of trees in, **368, 369**; beneficial insects in, **4, 490**; *Beauveria bassiana* infesting sawfly in, **5**

WL 1650 (see 1,3,4,5,6,7,8,8-Octachloro-3a,4,7,7a-tetrahydro-4, 7-methanophthalan)

woeberiana, Laspeyresia (see *Enarmonia formosana*)

Wofatox (see Methyl-parathion)

woglumi, Aleurocanthus

woodi, Acarapis

Wool, digestion of, by *Tineola bisselliella*, **516**; in diet for *Attagenus megatoma*, **623**; treatment of, with antimetabolite against pests, **259**

Woollen Fabrics, texture of, in relation to hatching of *Attagenus megatoma*, **626**

Wyandotte W-24 (see N-(α-Methylacetonitrile)morpholine)

X

xanthenes, Hydroecia

Xanthomonas pelargonii, experiments on *Trialeurodes vaporariorum* transmitting, to geraniums, **648**

xanthostigmus, Apanteles

Xenufens ruskini, egg-parasite of *Caligo memnon* in Costa Rica, **488, 492**

Xestobium rufovillosum, in timber in Britain, **173, 643**; tests of timber preservatives against, **233**

X-rays, effects of, on insects, **534, 584**; used in developmental study of parasites of *Coleophora laricella*, **628**; use of, in detection of *Dendroctonus pseudotsugae* in timber, **452**; influence of, on virulence of entomogenous fungi, **522**

Xyleborus, species of, infesting timber in Nigeria, **694**; colour preferences of adults of, **694**; traps for, **694**

Xyleborus affinis (*mascarensis*), in Ghana, **375, 538**; infesting timber, **375**; synonymy of, **538**

Xyleborus alluaudi, in Ghana, **538**; synonymy of, **538**

Xyleborus badius (see *X. torquatus*)

Xyleborus camerunus (see *X. alluaudi*)

Xyleborus compactus (*morstatti*), in W. Africa, **113, 118, 440, 538**; in Indonesia, **517**; in Tanganyika, **517**; on cacao, **113, 118**; on coffee, **440, 517**; effects of cultural practices on infestation of cacao by, **114, 119**; distribution of, **517**; dieldrin against, **440**; synonymy of, **517, 538**

Xyleborus confusus (see *X. ferrugineus*)

Xyleborus destruens, on cacao, teak and other trees in Java, **517, 638**; bionomics of, **517**; *Fusarium* sp. associated with, **517**

Xyleborus ferrugineus, in W. Africa, **376, 538**; in Angola, **377**; bionomics of,

infesting timber and forest trees, **377**; survey of data on, **376**; synonymy of, **376, 538**
Xyleborus fornicatus (on tea in Ceylon), on shade trees, **619**; sprays against, **619, 672**
Xyleborus fuscatus (see *X. ferrugineus*)
Xyleborus kraatzi (see *X. perforans*)
Xyleborus mascarensis (see *X. affinis*)
Xyleborus morstatti (see *X. compactus*)
Xyleborus perforans, in Ghana, **538**; synonymy of, **538**
Xyleborus semiopacus (*semigranosus*), on forest trees in Ghana, **375, 538**; synonymy of, **538**
Xyleborus testaceus (see *X. perforans*)
Xyleborus torquatus, in Ghana, **538**; synonymy of, **538**
Xylechinus pilosus, on firs in U.S.S.R., **255**; relation of *Monochamus urussovii* to, **255**
Xylene, as solvent for insecticides, **18, 502**
Xylopertha picea (in Ghana), infesting timber, **374**; destroying immature stages of *Analeptes trifasciata*, **375**
Xylosandrus (see *Xyleborus*)
xylosteanus, Archips (*Cacoecia*)
Xylotachina diluta, parasitising *Cossus cossus* in U.S.S.R., **74**
Xyloterus (see *Trypodendron*)

Y

Yeast, in diets for insects, **222, 310, 411, 414, 439, 507, 529, 586, 622, 623**; filtrates of, in experiments against *Anthonomus grandis*, **363**
Yezabura malifoliae (see *Anuraphis plantaginea*)
yosemite, Pissodes
ypsilon, Agrotis (see *A. ipsilon*)
Yugoslavia, pests of maize in, **244, 249, 291, 348, 394**; pests of lucerne in, **56, 297**; orchard pests in, **54, 57, 129, 193, 326**; *Dacus oleae* on olive in, **128**; *Sciaphobus squalidus* on hazel in, **326**; *Quadraspidiotus perniciosus* on black currant in, **299**; *Pseudococcus* sp. on strawberry in, **297**; *Aphis fabae* on beet in, **129**; *Stenocarus fuliginosus* on poppy in, **55, 56**; *Pammene rhediella* on hawthorn in, **326**; forest pests in, **36, 53, 54, 55, 56, 57, 128, 193, 194, 235, 249, 325, 326, 327, 328, 348, 463, 465**; *Tribolium madens* in stored products in, **468**; *Ceratitis capitata*, in **326**; *Eurygaster maura* in, **314**; Rhizotrogine Melolonthids in, **325**; wireworms in, **394**; natural enemies of pests in, **56, 129, 193, 249, 297, 327, 394, 463**; diseases of insects in, **348, 394**

Z

Zabrotes subfasciatus, in stored beans, **300**; in Angola, **300**; measures against, **300**
Zantedeschia aethiopica, Coccus hesperidum on, in Norway, **293**; toxicity of phosphorus compounds to, **293**
Zanzibar, *Aulacaspis tubercularis* on mango in, **230**; *Oryctes monoceros* in, **590**
zea, Heliothis
Zeadiatraea grandiosella, endrin granules against, on maize in Arkansas, **655**
zeamais, Sitophilus
zebeana, Cydia (*Laspeyresia*)
Zectran (see 4-Dimethylamino-3,5-xylyl Methylcarbamate)
Zeiraphera (see *Enarmonia*)
Zenillia caesar, parasitising *Choristoneura pinus* in Wisconsin, **490**
Zenillia longicauda, parasitic on Geometrids in Germany, **102**
Zenillia pecosensis, parasitising *Choristoneura pinus* in Wisconsin, **490**
Zenillia roseanae (see *Pseudoperichaeta*)
zenobia, Pimpla
zetterstedti, Lonchaea
Zeuzera coffeae, on coffee in India, **527**; parasite of, **527**
Zeuzera pyrina, bionomics of, on fruit trees in France, **246**; sprays against, **246**
zeuzerae, Bracon (*Amyosoma*)
zimmermanni, Dioryctria
Zinc, Radioactive, effects on *Bracon hebetor* of γ-radiation from, **484**
Zinc Chloride, treatment of timber and bamboos with, against Coleoptera, **138, 256**; labelled with ^{65}Zn, **484**
Zinc Sulphate, influence of, on diapause in *Leptinotarsa decemlineata*, **644**; labelled with ^{65}Zn, **484**
zinckenella, Etiella
Zineb, in spray mixtures against Coccids and *Phyllocoptruta oleivora*, **371, 611**; question of effects of, on fecundity of *Tetranychus telarius*, **206**; tolerated by predacious mites, **491**; and oil emulsion, **371**
Zinnia elegans, effects of virus disease of, on feeding by *Myzus persicae*, **494**
Zinophos (see O,O-Diethyl O-2-Pyrazinyl Phosphorothioate)
Ziram, against *Empoasca fabae*, **697**; in spray mixtures against orchard pests, **426**; question of effects of, on fecundity of *Tetranychus telarius*, **206**

Ziziphus, *Carpomyia vesuviana* on, in Pakistan, **279**
zonatus, *Dacus*
zonellus, *Chilo*
Zoralin, containing DDT and BHC (*q.v.*), **327**
Zygina, characters of, **42, 43**
Zygina rhamni, bionomics of, on vines in France, **548**
Zygina subrufa (see *Thaia*)
Zygophyllum fabago, *Microlarinus* spp. ovipositing on, **496**